THE IMPACT OF RURAL POVERTY ON TEACHERS' PERCEPTIONS

by
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Abstract

Rural poverty has been on the rise across New York State over the past decade. This rise in poverty has affected the academic achievement gap in grades three through eight state assessment scores for rural students living in poverty. A majority of the students in Oswego County, New York are from rural environments where academic and social support services are lacking. Rural students living in poverty often begin their academic years at a disadvantage and struggle academically due to the social and emotional stressors caused by poverty combined with weak literacy skills. Since the mandatory 2012 adoption of the Common Core Learning Standards in New York State, which brought increased rigor and complexity of the state assessments, a concern has surfaced regarding the effect of this educational reform on the achievement gap among rural students living in poverty.

This research examines (a) the extent of the historical achievement gap on the NY State assessments in grades three through eight for ELA and math in Oswego County, NY; and (b) perceptions surrounding poverty and student achievement. A two-part intervention strategy was examined for closing the achievement gap by (a) using a poverty simulation training as a tool for increasing cultural awareness, and (b) providing professional development for culturally responsive classroom strategies targeting increased academic achievement for rural students living in poverty. This research was not an experimental study design but correlational in design due to sampling constraints.

Data collected from the Poverty Perception Instrument following the simulation was analyzed by a Mixed Model ANOVA to determine whether participants had a change in

perception surrounding poverty. Results of the testing revealed a shift in perceptions of teachers' views on poverty as a personal and economic problem. Data collected from the pre- and posttest surveys following the professional development sessions were tested using a series of paired-samples t-tests. Results indicated a shift in teachers' understanding regarding *Big Picture Learning Design* and *Teaching for Extension and Application of Knowledge* as important areas in supporting learning for rural students living in poverty. Results are discussed in view of the effectiveness of these interventions in shifting teachers' perceptions of students from rural poverty.

Keywords: rural poverty, academic achievement, poverty simulation, culturally responsive classroom strategies

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Chapter 1

Rural Poverty and Student Achievement

Rural poverty has been on the rise across New York State over the past decade (Schafft, 2006; Appendix A). This rise in poverty has consequences for the academic achievement gap in state assessment scores. Proficiency is defined by a passing score of 65 or greater for students in grades three through eight in both English Language Arts (ELA) and math (Desimone, Smith, Hayes, & Frisvold, 2005). Since the adoption of the Common Core Learning Standards (CCLS) by the New York State Board of Regents in 2012, high stakes assessments are now aligned to the increased rigor reflected in the new learning standards. Rural students living in poverty often score below their peers on these high stakes assessments in both ELA and math. The issues surrounding the effects of poverty on student learning are complex, and some are beyond the control of school districts. Several factors have been shown to contribute to the achievement gap for rural students living in poverty including weak pre-school literacy skills (Costantino, 2005), stress-induced cognitive overload (Noble, Farah, & McCandliss, 2006), lower levels of academic family support (Bradley, Corwyn, McAdoo, & Coll, 2001), the school climate and environment (Goldschmidt & Wang, 1999), and decreased student motivation resulting from lack of self-confidence (Day & Burns, 2011).

The disadvantages faced by rural students living in poverty affect their ability to succeed academically. The introduction of the CCLS across New York State and the accompanying higher rigor assessments now raises the bar for achievement for all students. For those living in rural poverty the question remains: Will they be able to meet the academic demands of the more rigorous state assessments, or fall further behind?

Theoretical Framework and Literature Review

Living in economic distress deprives children of more than adequate nutrition, a stable home-life, and a secure community (Thompson & Dahling, 2019). With a focus on social justice, this research posits that poverty deprives children of learning opportunities (Iruka et al., 2020; Langenkamp & Carbonaro, 2018). Studies reporting the long-term effects of poverty on brain development and learning suggest that some children from poverty retain the physical effects from living under chronic stress throughout their lives (Hackman & Farah, 2009; Juster, McEwen, & Lupien, 2010). Learning becomes difficult, resulting in loss of motivation and possibly high school drop-out (Irvin et al., 2011; Wilcox et al., 2014). Additionally, the economic forecast remains that economically disadvantaged individuals will earn less than their peers, perpetuating the cycle of generational poverty.

Given the constraints faced by disadvantaged children to reach their full potential, communities grappling with rising poverty also feel the effects of the need for increased social services, a reduced skilled labor force, less spendable income to support a healthy, vibrant economy, and a decline in the quality of life for all community members (Hall & Howell-Moroney, 2012). State and Federal programs designed to provide skills to individuals living in poverty often result in minimum wage jobs. While the support may provide a means for a family to become more self-sufficient, it does little to move individuals out of the cycle of poverty (Desmond & Western, 2018). Identifying educational gaps early on and providing educational supports that levels the playing field between economically disadvantaged students and their peers might better serve students living in poverty (Plucker & Peters, 2018).

Rural students living in poverty comprise a unique population of low socioeconomic status (SES) students. Obstacles to learning faced by rural students living in poverty differ from those faced by students in urban settings in several aspects. Support services readily available in urban areas such as medical, social, and employment services are often lacking or hard to access due to the geographic isolation; public transportation is nonexistent and an obstacle to accessing any services that may be available. Additionally, rural schools often lack support service personnel such as school counselors and psychologists (Clopton & Knesting, 2006). Access to well-stocked libraries, print environments, and internet availability are often limited, with low SES students less likely to have easy access to these sources. (Costantino, 2005).

Opportunities to engage in extracurricular or enrichment activities may likewise be limited for rural students living in poverty due either to financial restrictions, transportation, or family support (Tate, 2008). These limitations, coupled with the cognitive stressors accrued from living under conditions of financial, emotional, and physical stress, all contribute a negative effect on learning for rural students living in poverty (Evans, 2003; Lauren & Gaddis, 2013).

Infants exposed to the constraints of poverty often enter school at a lower cognitive level than their non-poverty peers (Evans, 2003; Evans & English, 2002; Farah et al, 2006). Regardless of geography, the gap in academic achievement between low and high SES students may be as much as two to three times larger than that between black and white students (Ravner, 2012). This necessitates accurate measurement of the learning gap if we are to apply pedagogical and policy measures that may be effective in mitigating the differences. The problems that arise from persistent poverty cut across all elements of culture and geography and create barriers to educational opportunities. The need to address these inequalities demands attention and more research.

The importance of pedagogical practices in classrooms of poverty becomes particularly critical given the academic deficits that these students carry with them. Academic motivation and classroom engagement remain low among rural students living in poverty unless instruction is tailored to meet their emotional and cultural needs (Day & Burns, 2011; Haberman, 1991; Hardre & Sullivan, 2008; Reeves, 2012). The amount of school and family social capital has been shown to increase student motivation and engagement because they build a stronger sense of community. Rural students living in poverty often are deficient in both family (Parcel & Troutman, 2013) and school social capital (Knoell et al., 2013).

Rural children raised in poverty are often part of a continuing trend of generational poverty that stems from limited opportunities of employment, transportation, and services reflective of many rural communities (Unity, Osagiobarre, & Edith, 2013). In this regard, rural poverty may differ from urban and suburban areas where poverty may also be attributed to situational and relative poverty. Where fewer opportunities exist for employment and economic advancement, family income becomes a reliable predictor of academic success, school completion, and future economic earnings (Lacour & Tissington, 2011).

It is important for schools to understand the world of rural students living in poverty. Cultural sensitivity to the needs of students living in poverty can help teachers and administrators implement policies that support learning (Knoell & Crow, 2013; Roy & Raver, 2014). It is also important that teachers connect what they teach to the real-world reality of economically disadvantaged students. By considering diverse learning needs for rural students living in poverty and raising expectations for academic success, schools can help support the academic achievement of these students (Desimone et al., 2005). Through increased sensitivity and

cultural awareness, schools can create content that is effective and challenging for disadvantaged students.

For children from poverty to bridge the achievement gap they need schoolwide supports that promote a shift from dependent learners to independent thinkers (Hammond, 2015). Educational inequalities foster dependencies and move systems further away from an environment that fosters social justice. Embedding culturally responsive practices into pedagogy reinforces sensitivity to diverse learners and learner needs. Poverty is not a culture, but rather a cycle of conditions built into the structural inequalities of our social and economic systems.

Across New York State, policies aimed at increasing student achievement have focused on implementation of the CCLS and increased rigor of high stakes assessments. At the same time, poverty rates, in particular those of rural communities, continue to escalate. Given the learning constraints faced by rural students living in poverty, it remains to be seen how the new state policy aligned to the Common Core will affect academic achievement for rural students living in poverty.

Impact of Poverty on Children

Physiological and Cognitive Impacts of Poverty. Socioeconomic status (SES) has long been associated with a decrease in quality of life experiences from childhood through adult years (Juster, McEwen, & Lupien, 2010). In effect, a life in poverty alters brain development that can affect health, well-being, cognition, and emotional health throughout one's lifespan (Hackman, Farah, & Meaney, 2010). The components of poverty such as exposure to violence, environmental toxins, inadequate housing, poor nutrition, and lack of healthcare interact in various ways to intensify the impact on brain development (Evans & English, 2002). Children at the lowest end of the SES spectrum show more symptoms of cognitive impairment which are

positively correlated with poor academic achievement (Carrion & Wong, 2012; Hackman et al., p. 651). Some of the poverty-related impairments among low SES students include deficits of language skills, working memory, cognitive control, and retention levels (Farah et al., 2006). Children with deficits of working memory also exhibit higher rates of cognitive problems, inattentive symptoms, distractibility, problems monitoring work quality, and difficulties generating solutions to problems (Alloway, Elliot, Gathercole, & Kirkwook, 2009).

The physiological effects on brain development attributed to poverty have been noted in infants as early as six to nine months old. Using EEG measurements of infants awake but in a resting state, researchers found brain activity disparity among low SES and high SES children (Tomalski et al., 2013). Identifying these early indicators in infants underscores the risks that poverty may impose on developing brains, particularly during this critical period of language development. Recent studies have shown that a life lived in poverty affects cortical thickness, an area of the brain that supports language and literacy (Piccolo et al., 2016). The longer an individual lives under chronic stress related to poverty, the greater the reduction in cortical thickness. When left unchecked, the chronic stress of poverty continues to affect individuals on cognitive, psychological, social, and emotional levels as they age. In the school environment, low SES students are more likely to exhibit poor working memory and delayed recognition, both of which impact learning and achievement (Hackman et al., 2009). Given targeted academic interventions rural students living in poverty may be able to rise above their environment, possibly resulting in improved mental and physical health.

Current research has demonstrated that at least some of the effects of childhood poverty are reversible due to the neuroplasticity of the human brain. Interventions focused on enhancement of cognitive stimulation can have a positive effect on decreasing or reversing weak

language skills, improving attention, and decreasing aggressive behaviors in children. Although teachers have little control over the home life of children entering school, understanding how poverty affects brain development may help improve teaching practices. Through the proper placement of interventions at critical periods of a child's academic years, teachers can help to ameliorate the impact of poverty by supporting weak skill sets and promoting strengths. (Hackman et al., 2010). Yet, teacher attitudes and beliefs may themselves perpetuate the cognitive effects of poverty in the classroom. The experience of poverty at a very young age has been linked to chronic health issues related to the autonomic, endocrine, and immune systems (Miller, Chen, & Parker, 2011). A general lack of understanding of how poverty affects brain development may cause teachers to perceive low SES students as less motivated or less intelligent, leading to a decrease in attention and positive reinforcements for good performance (Bradley & Corwyn, 2002). While it could be that health issues related to the physiological impacts of poverty may cause a higher rate of absenteeism for low SES students, this is often interpreted by teachers as a student's lack of motivation and a low value on education.

Schools can support staff understanding of the physiological effects of poverty on learning by providing the necessary training for teachers. Through increased understanding, teachers may be better prepared to help students become more successful academically in preparation for college and career readiness.

Emotional Impacts of Poverty on Children. The physiological effects of poverty carry an emotional impact on children from birth through adulthood. Current research focused on brain development, environmental signals, and behavioral responses helps shed light on ways that poverty regulates emotions. The development of emotion-regulatory problems in children experiencing chronic stress often leads to issues with social behavior (Pollak, 2008). The early

experience of maltreatment in childhood results in increased levels of anxiety and depression as individuals' age. Additionally, physically abused children are more likely to focus attention on threatening cues rather than contextually relevant information (Pollak, 2008). While this may be adaptive behavior in unstable environments, in more normal settings such as the classroom, such behavior becomes maladaptive. Students, perceiving the possibility of a threat, even where none exists, may have a difficult time focusing. Chronic stress, comprising the cumulative load of physiological and environmental aspects related to poverty, is also inversely related to working memory as children age (Evans & Schamberg, 2009). Because children overexposed to multiple stressors remain on "high alert," they may be incapable of turning off adaptive physiological responses which, in turn, lead to unregulated behaviors. Misunderstood behaviors for some students living in poverty such as aggression, withdraw, depression, or anxiety are often misunderstood and perhaps could be better interpreted with an understanding of the physiological regulation of emotions and programs supporting emotional behaviors.

Sociological Impacts of Poverty on Children. Social identity plays a large part in determining both school readiness and academic success for students living in poverty. Well before students begin schooling, childhood adversities may undermine healthy cognitive development for those living under chronic stress. Students may enter school behind peers in vocabulary development, literacy skills, and exposure to knowledge that serves as a foundation for further learning. The relationship between engaging in positive conversation with children and increased linguistic skills succumbs to stress (Hoff, 2003; September, Rich, & Roman, 2016). Often, families from poverty do not have resources to support their children's developing minds with literature, cognitive stimulation in the home, or field trips that help children understand their worldly environment.

Before children can begin an academic career that builds toward college and career readiness, they must enter school with a healthy foundation that includes physical, socio-emotional, creative, linguistic, and cognitive components (September et al., 2016). Instead, chronic stress, along with a childhood lacking in academic preparation, causes rural children living in poverty to enter school in a state of "behavioral allostasis" (Garner, 2014). In this state, students resort to behaviors that help to blunt the impact of toxic stress. These may include low motivation, irritability, aggressiveness, and low classroom engagement (Brown, Ackerman, & Moore, 2013). Over time, these behaviors may manifest into lifelong habits that can affect one's physical health, emotional health, and possibly future opportunities (Garner, 2014). Research examining the effects of building strong positive teacher-child relationships in the classroom indicated a decrease in aggressive-disruptive behaviors in elementary students (Madill et al., 2014).

The contributions of family social capital to a student's self-esteem has been well documented (Blitz et al., 2013; Israel, Beaulieu, & Hartless, 2001; Pomerntz, & Moorman, 2007). Family social capital represents the "norms, social networks, and relationships" needed for healthy child development (Israel et al., 2001, p. 45). In combination, these contribute to school readiness. When missing from the home environment, the lack of home social capital often results in decreased self-esteem, lack of motivation, and a poor sense of student identity (Dean & Jolly, 2012; Roy & Raver, 2014; Yan Ho, William, Li, Sophia, & Chan, 2014). A lack of self-esteem has been associated with behaviors that cause students to refrain from engagement in learning opportunities, possibly due to the fear of failure and the associated emotional cost in terms of stress. Unfamiliar classroom and social activities have been shown to trigger a reaction

to a student's sense of identity, causing these activities to appear threatening (Dean & Jolly, 2012).

The social impacts of poverty extend throughout a student's academic years and into college and career choices. Maladaptive behaviors induced through the physiological response of chronic stress place students living in poverty at risk of dropping out of high school (Zaff et al., 2016). Additionally, awareness of social status attainment influences a student's belief about the choices available to them. Family status and family support play a critical role in self-efficacy and expectations related to college and career choices (Metheny & McWhirter, 2013). Consequently, rural students living in poverty may view certain opportunities as blocked or inaccessible to them (Berzin, 2010; Eshelman & Rottinghaus, 2015). The self-limiting cycle continues as these children experience decreased self-motivation based on conceptions of social justice and equity of opportunities (Day & Burns, 2011). Geographic isolation and weak school-home connections also contribute to low motivation for rural students living in poverty (Irvin & Meece, 2011). Students may be left feeling both frustrated and disillusioned, compounding the effects of poverty as students attempt to navigate a system in which they often feel powerless.

Poverty and Learning

Poverty not only affects the physical and emotional well-being of children, but also has far-reaching and lasting effects on a child's cognitive development and their ability to succeed academically. The effects of rural poverty have been less studied than those of urban poverty. Unique characteristics are associated with rural poverty, such as geographic isolation and scarcity of resources, which merit a deeper understanding of the interacting factors contributing to student achievement and learning in schools. Even where resources may be available, the lack of reliable transportation makes access more difficult. Under the influence of rural poverty,

school and family interactions affect the cognitive development of students, and ultimately influence the extent of their academic achievement and career success.

The effects of poverty on learning begin well before a child's entry into the academic environment and are reflective of the degree of hardship faced by families (Bradley & Corwyn, 2002; Bradley, Corwny, McAdoo, & Coll, 2001). Maternal influences on pre-natal development, as well as the correlation between a mother's educational level and her child's academic success, have been well documented (Bradley et al., 2001; Roy & Raver, 2014). Furthermore, direct correlations can be established between family income and a student's achievement in math and reading upon entering school (Dahl and Lochner, 2012; Noble, Farah & McCandliss, 2006; Robinson, 2013).

Rural poverty poses additional burdens on students due to the limited access of much needed resources. Because poverty exerts additional stressors on the lives of students, the accessibility of psychological services in public schools becomes important. For many rural schools, these services may be limited or provided on a restricted basis, since many districts may need to share the services of a single mental health provider due to geographic or financial constraints (Clopton & Knesting, 2006; Knoell & Crow, 2013). Public resources provided for relief from poverty may be difficult to access for rural families due to the isolated geography and limitations of public transportation. These limited resources may include access to print environments and internet service (Constantino, 2005; Tate, 2008) with the ultimate effect of reducing the educational and innovation capacity of students from rural poverty (Hall & Howell-Moroney, 2012).

Cognitive Development, Physical Development and Poverty

The cumulative effects of living in poverty are reflected in the cognitive development of children. Chronic stressors such as violence, turmoil, separation, crowding, noise, and living conditions adversely affect the mental, physical, and emotional development of students. The result is that direct physical changes in brain development have been detected for rural students living in poverty (Evans, 2003; Evans & English, 2002; Evans & Marcynyszyn, 2004; Hackman & Farah, 2009). Areas of the brain most affected by the stressors of poverty include the left perisylvian and prefrontal areas which correspond to language and executive functions, respectively (Jensen, 2013). The consequences for students living in poverty are a decrease in learning ability, resulting in a lower level of academic achievement compared to non-poverty peers (Evans, 2003; Evans & English, 2002; Evans & Marcynyszyn, 2004).

Physical development of children living in poverty is also a concern and has been shown to have a direct impact on their ability to learn. Health problems that lead to frequent absenteeism ultimately affect the academic achievement of students coping with the stress associated with poverty. Comparisons among low and high SES students indicate that students living in poverty are more likely to suffer from increased blood pressure, increased levels of neuroendocrine stress hormones, increased body mass index, heightened distress and decreased self-confidence (Evans et al., 2004; Evans & English, 2002; Yoshikawa et al., 2012).

Family Social Capital and Poverty

The impact of family support on a student's academic success begins at a very young age for non-poverty children. In many homes, a child's exposure to reading and vocabulary begins well before they enter pre-school. However, for rural students living in poverty, the exposure to literature is limited or absent. Limited access to print materials, limited funds to purchase these

items, or the inability of parents to engage in reading activities due to work schedules all contribute to lower reading and vocabulary development for students living in poverty as they enter school (Bradley et al., 2001; Dufur, Parcel & Troutman, 2013).

Parents' involvement in their child's education has been shown to have a direct impact on a student's academic life (Isreal, Beaulieu, & Hartless, 2001; Pomerantz & Moorman, 2007). A direct effect has been established between parental involvement and students' composite math and reading scores, grade averages, and the tendency to stay in school and graduate (Blitz et al., 2013). As students' progress through their academic careers, the influence of family is also reflected in the educational aspirations among students living in poverty. Rural students living in poverty display a longstanding trend of lower educational achievement due to conflicts between school, family, culture, and peer norms (Berzin, 2010). Families living in poverty may have less experience than other parents in the educational arena. For similar reasons, school aspirations and post-secondary attainment may be negatively affected compared to students who are not economically disadvantaged (Demi, Coleman-Jensen, & Snyder, 2010).

School Social Capital and Poverty

School relationships often fill a crucial void for rural students living in poverty. Many of these students carry with them a weakened foundational trust of adults due to circumstances surrounding home life (Knoell et al., 2013). Establishing relationships with caring adults in the school community can have positive effects on the academic and graduation outcomes for rural students living in poverty (Goldschmidt & Wang, 1999; Irvin, Meece, Byun, Farmer, & Hutchins, 2011; Sass, Hannaway, Xu, Figlio, & Feng, 2012). Early intervention for students living in poverty who are at risk for not successfully mastering grade-level achievement in reading and math can greatly increase the likelihood of high school graduation. Differences in

graduation rates from rural schools is often related to teacher efficacy and expectations, rigorous learning opportunities, and quality instruction (Wilcox, Angelis, Baker, & Lawson, 2014).

Increasing the family-school connections through improved communication and collaboration helps to increase the trust and involvement of rural families in the academic life of their children. Additionally, family-school ties contribute to raising the level of awareness and familiarity among teachers and administrators of the needs of students coming from rural poverty.

Poverty Awareness, School Climate and Student Achievement

School climate plays a key role in promoting student achievement (Irvin, Meece, Byun, Farmer, & Hutchins, 2011). A positive school climate helps foster a safe learning environment for all children. Yet, students must navigate the school environment having unequal capacities to function under established school climates. Unless school personnel are trained to become sensitive to the disparities that students carry with them, some students may not be served by the established norms. For students living in rural environments, lack of both school professional services and of awareness training for staff may have consequences for the development and academic achievement for all students. This is particularly impactful for those from poverty. Rural students living in poverty often need more support for psychological services than is available in rural school settings (Clopton & Knesting, 2006). Without the adequate support of trained professionals, district administrators and teachers are left with the responsibility of responding to the needs of students from their own level of understanding.

Training of principals serving rural, poor school districts has been effective in helping administrators understand the problems, causes, and conditions affecting student learning (Browne-Ferrigno & Allen, 2006). Because personal beliefs have a strong effect on student

achievement, maintaining high expectations for all students, but particularly for students living in poverty, has been shown to have a positive effect on achievement (Jacobson, 2001). Building sensitivity to, compassion for, and awareness of limitations imposed by a life in poverty may be helpful for administrators in setting policy that creates a positive school culture. Teacher perceptions can also have a large effect on teaching efficacy and, consequently, student achievement (Hadre & Sullivan, 2008). Helping teachers improve over time by targeting strategies helpful for low performing students has been shown to be effective in raising achievement (Sass, Hannaway, Xu, Figlio, & Feng, 2012).

Building strong relationships between students and school personnel improves achievement and can be fostered through targeted sensitivity training (Irvin, Meece, Byun, Farmer, & Hutchins, 2011). It is important for administrators, when setting policy, and teachers, when delivering instruction, to be aware of the effects of poverty on learning as a way to promote positive school culture and increase cultural sensitivity (Lauen & Gaddis, 2013). It is clear from the literature on the impact of rural poverty that there are many opportunities and levels to explore for interventions. Developing relational networks and establishing meaningful parent-school collaborations are two strategies found to be successful in creating an inclusive and positive school culture (Williams, Greenleaf, Barnes, & Scott, 2019).

Needs Assessment and Problem Statement

In order to understand the academic constraints faced by rural students living in poverty with regard to academic achievement, it is necessary to examine how poverty and learning, cognitive development, family social capital and school social capital shape classroom learning. Through a foundational understanding of these factors, it may be possible to implement professional development for administrators, teachers, and school staff that raise awareness of the complexity of poverty on learning. The identification, development, or application of classroom instructional strategies shown to support learning for rural students living in poverty may promote greater academic equity. (Jensen, 2013). However, before solutions can be applied, the extent and direction of the achievement gap must be examined in depth, as well as the extent of perceptions held by those involved in working with rural students living in poverty.

Literature regarding the effects of poverty on learning and student achievement indicates that although the numbers of students living in poverty is on the rise nationwide, the issue is largely understudied in the rural setting (Iruka et al., 2020). Students living in rural poverty face unique constraints to learning due to their geographic isolation and the scarcity of supportive resources (Clopton & Knesting, 2006; Costantino, 2005; Tate, 2008). Multiple home stressors such as violence, crowding, noise, inadequate housing, and separation affect the mental and physical well-being of students living in poverty (Evans & English, 2002). These stressors carry over into the school environment and, ultimately, affect a student's ability to learn (Evans, 2003; Evans & Marcynyszyn, 2004). In particular, Noble, Farah & McCandliss (2006) found that poverty may directly influence developing sound recognition and subsequent letter recognition for emergent readers. Given the emphasis on higher order thinking, word processing and vocabulary acquisition inherent in the Common Core Learning Standards and the aligned New

York State Common Core assessments, the question remains: Are rural students living in poverty in Central New York at a greater disadvantage since the adoption of the Common Core across New York State? To investigate this question, a needs assessment was conducted. Specifically, the following research questions were addressed:

1. What are the current perceptions among district staff in Oswego County regarding the effect that poverty has on student learning?
2. What has been the historical achievement gap between poverty and non-poverty students in grades three through eight for English Language Arts and math state assessments?
3. How has the implementation of the Common Core Learning Standards and the aligned state assessments in grades three through eight for English Language Arts and math affected the achievement gap for rural students living in poverty?

Chapter 2

Needs Assessment

Two studies were conducted to investigate the research questions. The first study was focused on understanding the current, underlying perceptions regarding poverty and learning among the district staff in Oswego County, NY. The second study examined the historical achievement trends for grades three through eight in ELA and math, both pre- and post-Common Core. These trends were compared between high and low SES student populations in order to measure both the presence and extent of possible achievement gaps.

Study One: Perception Survey

A survey was administered across Oswego County in order to determine the extent to which district staff is aware of the constraints and needs of students living in rural poverty. For many school administrators, the environment of poverty is an unfamiliar one (Browne-Ferrigno, & Allen, 2006; Budge, 2006). Yet, research indicates that increasing awareness with regard to the learning and social deficits faced by rural students living in poverty better equips school administrators to initiate intervention programs successfully (Goldschmidt & Wang, 1999). Influencing teachers by changing perceptions related to poverty is also a powerful reform measure (Hardre & Sullivan, 2008).

Methods

Participants. All principals, teachers and staff in the county were eligible and invited to participate in the survey. A total of 426 principals, teachers and staff completed the voluntary and anonymous survey, representing a 24.4% response rate across the county.

Setting. The survey was administered across all school districts within Oswego County, New York during a two-week period in April 2015. The county is comprised of nine school

districts that serve 19,895 students in grades K through 12. Sixty-two principals and assistant principals, and 1,685 teachers and support staff (including Curriculum Specialists, Coordinators, Instructional Specialists, and others involved with instruction but not directly working in a classroom) are employed within the county (N = 1,747).

Instrument. Survey items were adapted from the Missouri Association for Community Action (http://www.communityaction.org) poverty simulation, and NPR Poverty in America Poll (http://www.npr.org/programs/specials/poll/poverty/staticresults7.html), with additional items developed by the researcher. Twenty-six items were selected for inclusion in this research. The items were chosen based on domains defining poverty as a social problem (9 items), personal problem (6 items), economic problem (6 items), and educational problem (5 items). A large number of studies conducted to investigate attitudes toward poverty have supported the validity of these items with the stated aim of gauging perceptions (Yun & Weaver, 2010). Face validity was tested by five professionals who reviewed the items and agreed at a rate of greater than 80% that the selected items supported the specific domains. A Cronbach alpha value of 0.64 was obtained for item reliability based on "perception". For the survey, perceptions surrounding poverty across three domains were measured:

- demographics
- perceptions of poverty in Oswego County, New York
- perceptions surrounding the effects of poverty on learning

The three domains of the survey were selected with the objective of identifying any perceptual differences among schools (Appendix B).

Procedure. An electronic survey of 26 items was constructed using Google Forms. After items were review by Johns Hopkins University faculty and CiTi BOCES Instructional Support

Staff, the survey invitation was distributed to all principals, assistant principals, teachers and support staff within Oswego County. The invitation to participate was sent on April 28, 2015 with the final response received on June 2, 2015. Three follow-up reminders were sent on May 1, 6, and 12 after the initial invitation. All responses remained anonymous. Responses were coded numerically and sequentially for analysis. The survey questions were analyzed using descriptive statistics.

Design and Analysis. This was a blanket survey administration across Oswego County, New York, to collect opinions and perceptions. Analyses were descriptive.

Study Two: Student Achievement Database

The rising poverty among rural students in Oswego County is a growing concern (see Appendix A). The second study addressed three primary goals: (a) to define the pre-Common Core achievement gap between high and low SES students across the county; (b) to define the post-Common Core achievement gap between high and low SES students across the county; and (c) to determine if there are changes in achievement gaps for rural students living in poverty as a result of the introduction of the Common Core Learning Standards.

Participants. Historical data were retrieved from the New York State Report Card system (data.nysed.gov) for the state accountability testing years from 2011 through 2015 for grades three through eight in English Language Arts (ELA) and math. This five-year database represents two years pre-Common Core testing and three years' post-Common Core testing, allowing for a comparison on achievement between economically disadvantaged and not economically disadvantaged students. Grade level achievement is defined by a proficiency score of 65 or greater on the NYS ELA and math assessments. Participants included all grade three

through eight students who took the ELA and math assessments between the years 2011 through 2015.

Variables. The database represents New York State assessment scores for students in grades three through eight for the school years 2011-2015, and contains the percent of students reaching Level 3 proficiently (65% or greater) on the ELA and math state tests. Scores for student achievement on state standardized assessments are divided into four categories: NYS Level 1 includes students receiving a 54 or less; NYS Level 2 includes students receiving a score range of 55-64; NYS Level 3 includes students scoring 65-84; and NYS Level 4 includes students scoring 85 or higher. Proficiency in ELA or math includes all students scoring at Level 3 and Level 4 combined. The NYS database also disaggregates assessment scores based on economically disadvantaged students (those receiving free or reduced lunch) and students not classified as economically disadvantaged. Poverty is complex and diverse, containing multiple levels and types of poverty. For the purpose of this study, the designations used by NYS were applied.

The dependent variable, grades three through eight assessment scores for ELA and math, was examined against two independent variables:

- changes in poverty rates measured by the percent of students receiving free or reduced lunch.
- changes in testing rigor defined as the introduction of the Common Core (denoted by the starting date of Spring, 2012)

Procedure. An initial 2-year analysis examining the historical relationship between poverty and student achievement was conducted using the available NY State database for student assessment scores (NYSED). Achievement data for grades three through eight in ELA

and math was extracted for students identified as receiving free or reduced lunch. The data was extracted for the 2010 and 2011 school years (pre-Common Core testing) and 2012 through 2015 school years (post- Common Core testing). Achievement is defined by the New York State Education Department as passing the state assessment with a score of 65 or higher.

Design and Analysis. This was a historical design to examine variable changes over time. Both descriptive and inferential statistics were used to address the research questions. Data was extracted via Excel and the pre- and post-Common Core analysis was performed using descriptive statistics and linear regression analysis.

Results

Study 1: Needs Assessment

Research Question 1. The first research question asked "What are the current perceptions among district staff in Oswego County regarding the effects that poverty has on student learning?" Results of items found that over 88% of all respondents acknowledge that poverty is an important problem in the county (Table1, Figure 1).

Table 1.

General Perceptions Surrounding Poverty

Question	Support Staff		Teachers		Principals	
	N	%	*N*	%	*N*	%
How big a problem is poverty in our county today? (Fig. 1)	45	11.0	363	85.0	18	4.0
Big Problem (5)	25	55.8	165	45.4	6	33.3
(4)	14	30.8	160	44.1	10	55.6
(3)	4	9.6	33	9.2	2	11.1
(2)	1	1.9	5	1.3	0	0
Small Problem (1)	1	1.9	0	0	0	0
Which is the bigger cause of poverty in Oswego County today? (Fig. 2)	45	11.0	363	85.0	18	4.0
People are not doing enough to help themselves	20	45.1	153	42.1	2	11.1
Circumstances beyond their control	8	17.6	88	24.3	4	22.2
Both of the above	17	37.3	105	29.0	10	55.6
No response	0	0	17	4.6	2	11.1
Perceptions on Impact of Major Causes of Poverty (Fig. 3)	45	11.0	363	85.0	18	4.0
Part-time and low wages	33	73.3	207	57.0	11	61.1
Job shortage	31	68.8	225	61.9	11	61.1
Welfare System	32	71.1	257	70.7	12	66.6
Drug or Alcohol	34	75.7	260	71.6	17	94.4
Lack of motivation	31	68.8	239	65.8	10	55.5
Single-parent homes	23	51.1	183	50.4	8	44.4
Medical bills	13	28.8	86	23.6	3	16.6
Insufficient job training	35	75.5	250	68.8	14	77.7
Compared to 10 years ago, is it easier today or harder for a person to start out poor, work hard, and get out of poverty? (Fig. 4)	45	11	363	85	18	4
Easier	4	9.8	9	2.6	0	0
Harder	28	60.8	222	61.2	10	55.6
Same	9	19.6	77	21.1	6	33.3
Don't know	4	9.8	55	15.1	2	11.1

The percentage indicating that poverty is a big problem was highest for support staff (55.8%) and lowest for principals (33.3%), with teachers falling in the mid-range (45.4%).

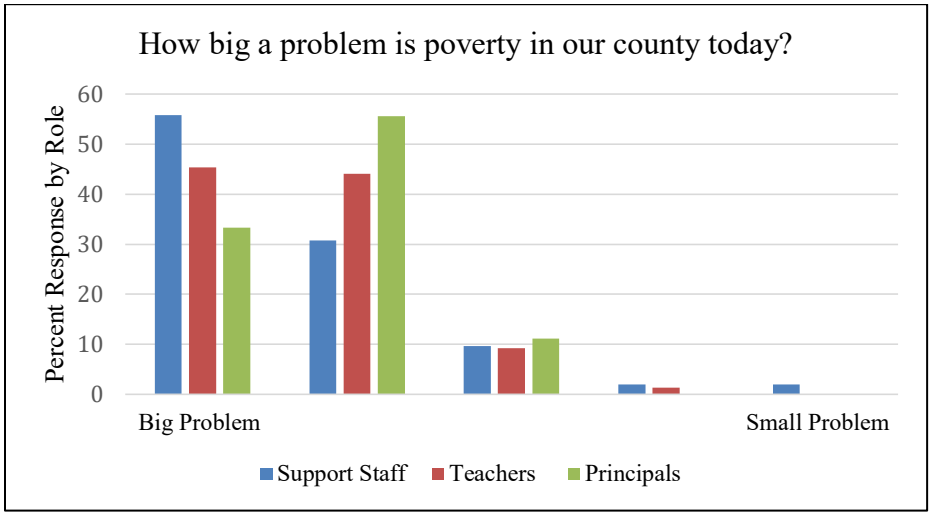

Figure 1. Perceptions surrounding poverty in Oswego County by role

Principals (55.6%) were more likely to attribute poverty to factors both within and outside of a family's control, while teachers (42.1%) and support staff (45.1%) were more likely to associate poverty with an individual's lack of effort to help themselves (Figure 2).

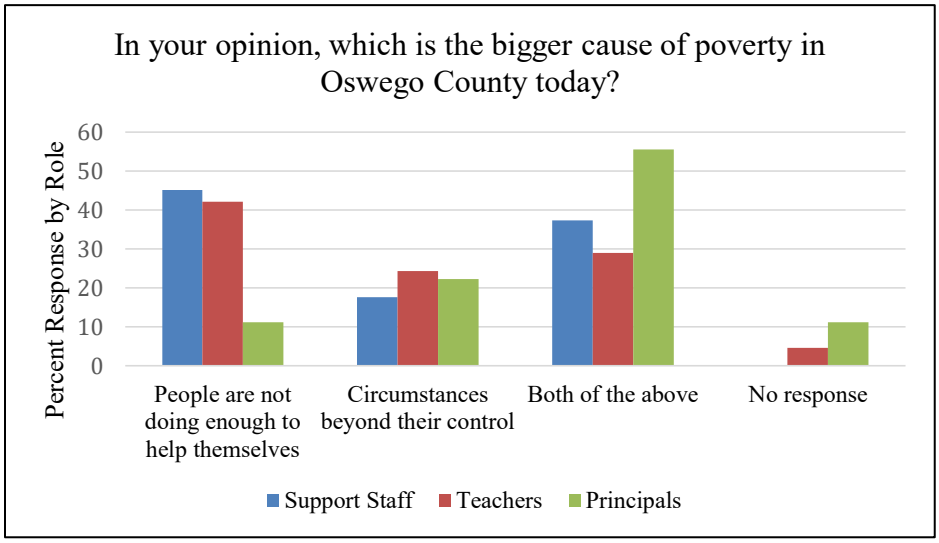

Figure 2. Perceptions surrounding causes of poverty in Oswego County

Participants identified one or more of the following as having a major impact on poverty: part-time and low wage jobs, drug or alcohol abuse, lack of motivation, and/or insufficient job training (Figure 3).

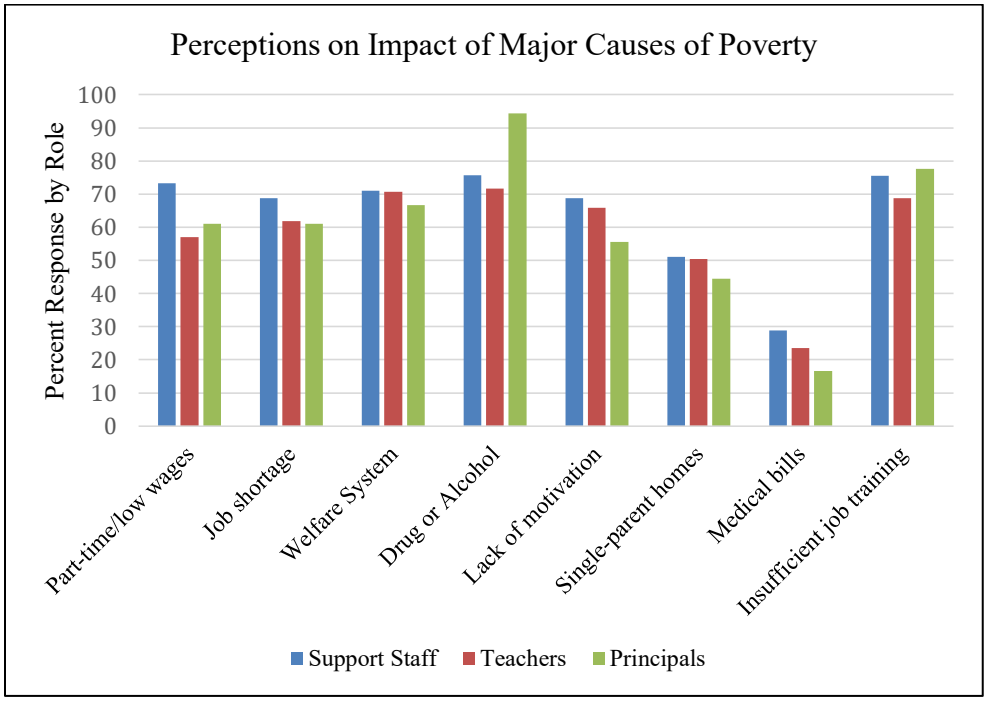

Figure 3. Perceptions surrounding impact of major causes of poverty

Nearly 60% of all participants believe that it is harder today to get out of poverty than it was 10 years ago (Figure 4).

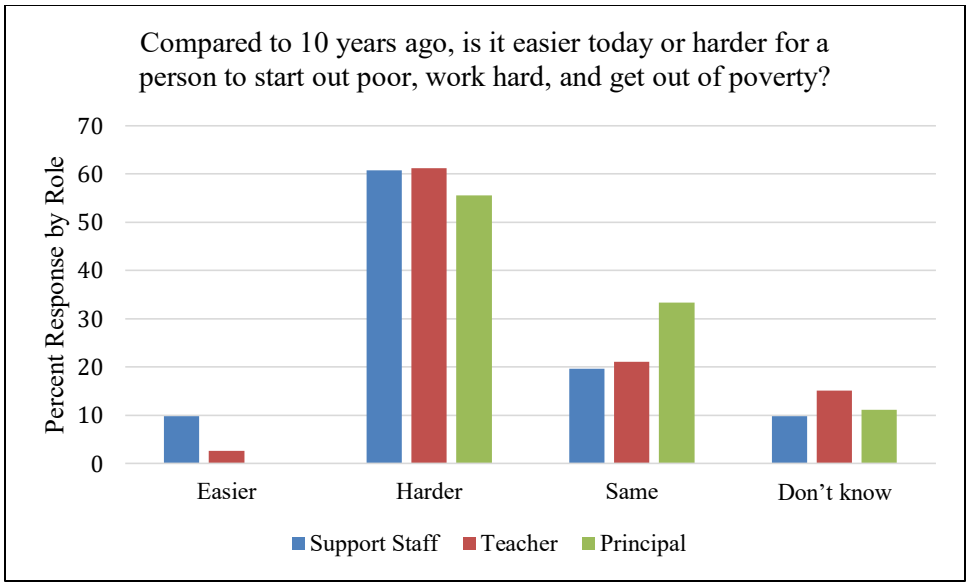

Figure 4. Perceptions surrounding historical trends related to poverty

Over 60% of district staff believe that services provided to families of poverty are adequate, but 87% agreed that there are also emotional costs associated with being poor in America (Table 2).

Table 2.

Perceptions Surrounding Understanding of Poverty

Attribution	Perception				
	Strongly Agree *N* (%)	Somewhat Agree *N* (%)	Don't Know *N* (%)	Somewhat Disagree *N* (%)	Strongly Disagree *N* (%)
Community service is adequate to help families with low income	65 (15.1)	193 (45.3)	65 (15.1)	78 (18.4)	26 (6.1)
Low income people do not have to work as hard because of available services	81 (18.8)	168 (39.4)	48 (11.3)	84 (19.7)	46 (10.8)
Low income families receive breaks with living expenses that others must pay for	106 (24.9)	168 (39.4)	67 (15.5)	58 (13.6)	28 (6.6)
People get enough to survive from welfare, food stamps and other programs	70 (16.4)	128 (30.0)	68 (16.0)	104 (24.4)	57 (13.1)
People with low income could improve if they applied themselves	87 (20.4)	196 (46.0)	65 (15.2)	65 (15.2)	14 (3.3)
There are additional emotional costs associated with being poor in America	238 (55.7)	135 (31.6)	38 (9.0)	14 (3.3)	2 (0.5)
The financial pressures faced by people of poverty are no different than that faced by other Americans	54 (12.7)	113 (26.4)	46 (10.8)	129 (30.2)	85 (19.8)

A majority of district staff held the perception that students living in poverty have limited vocabulary (86.3%) and are disconnected from the school environment (82.5%). Nearly half of the respondents (48.3%) also believe that families of poverty view education in a negative light,

and that rural students living in poverty are more likely to have learning disabilities than their non-poverty peers (42.9%) (Table 3).

Table 3.

Perceptions Surrounding Understanding Students Living in Poverty

Reason	Perception		
	True *N* (%)	False *N* (%)	Unsure *N* (%)
Students living in poverty have a more limited vocabulary	369 (86.3)	22 (5.2)	36 (8.5)
Students living in poverty have difficulties connecting school success with success in life	352 (82.5)	37 (8.5)	38 (9.0)
Families living in poverty have a negative view of education	206 (48.3)	81 (19.0)	140 (32.7)
Students living in poverty are more likely to have learning disabilities than non-poverty students	183 (42.9)	123 (28.8)	121 (28.3)

These results suggest some strong underlying perceptions among administrators and staff across the county regarding poverty and student achievement. In many high-need, rural schools, both principals and teachers may benefit from equity training in order to better understand the constraints to learning that are imposed through a life in poverty. Browne-Ferrigno and Allen (2006) have noted the high leadership turnover in rural districts when school personnel lack knowledge and training to work in high poverty areas. Understanding the cognitive effects of living under chronic stress may help principals and teachers collaborate on programs and strategies that help rural students living in poverty learn. Interventions must continue throughout the child's academic career in order to support student learning and decrease dropout rates (Goldschmidt & Wang, 1999).

Study 2: Academic Achievement for Students from Rural Poverty

Research Question 2. The second research question asks, "What has been the historical achievement gap between poverty and non-poverty students in grades three through eight for ELA and math state assessments?" Results of the grade three through eight ELA and math achievement gap for rural students living in poverty indicate that a gap was evident preceding the introduction of the Common Core and associated high stakes testing in SY2011, and that it persisted during year 1 of the introduction of Common Core in New York State in 2012. Figures 5 through 8 (below) present the relationship between the percent proficiency in ELA/math and the percent of economically disadvantaged students across the nine school districts in Oswego County. The data indicates growing numbers of students living in poverty, and a corresponding decline in proficiency scores for both ELA and math during the 2011-12 and 2012-13 school years.

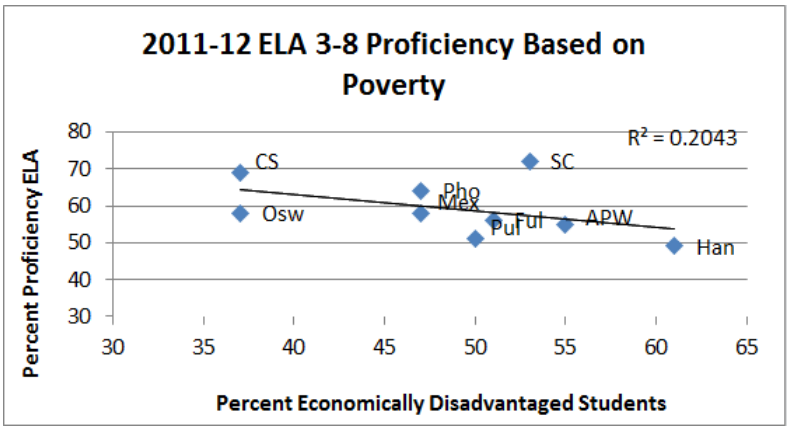

Figure 5. Grades 3-8 ELA achievement pre-Common Core testing (2011-12) for students living in poverty

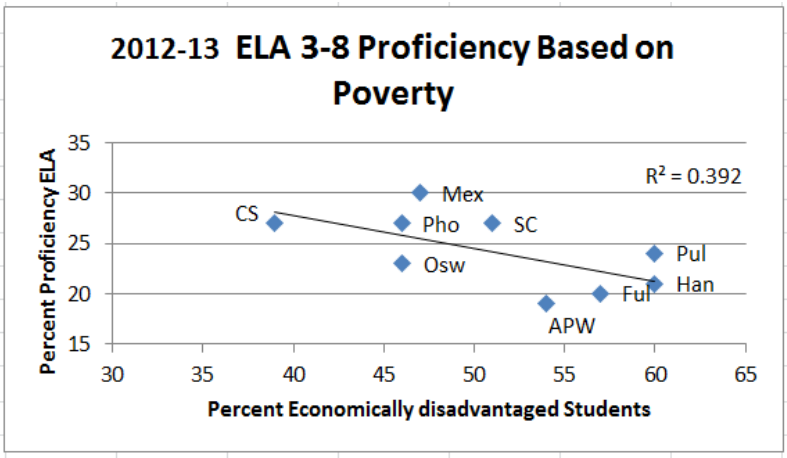

Figure 6. Grades 3-8 ELA achievement post-Common Core testing (2012-13) for students living in poverty

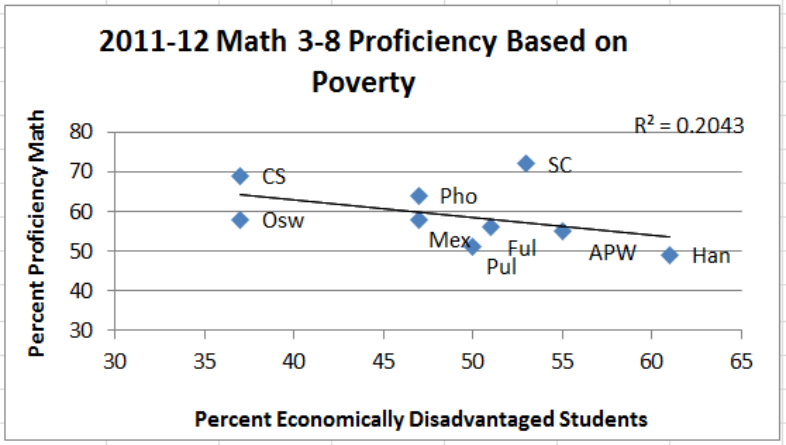

Figure 7. Grades 3-8 math achievement pre-Common Core testing (2011-12) for students living in poverty

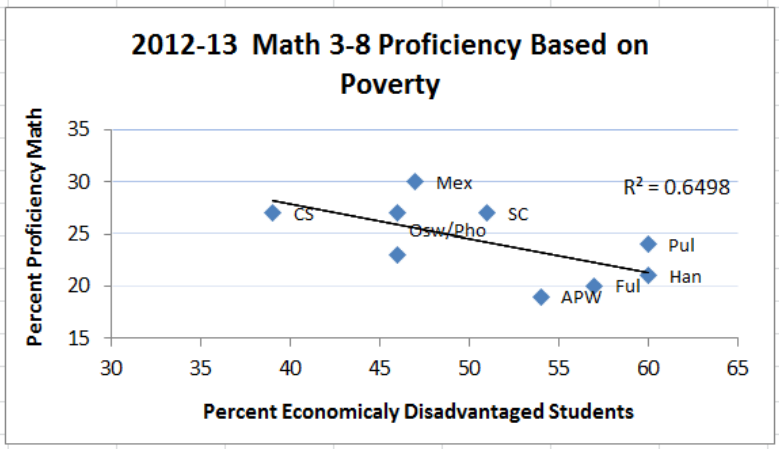

Figure 8. Grades 3-8 math achievement post-Common Core testing (2012-13) for students living in poverty

Rural youth's educational achievement and aspirations are correlated with a student's sense of school value and belonging (Irwin, 2011). Achievement gaps among rural students living in poverty and non-poverty have long plagued the school districts within Oswego County. As well-intentioned as it may have been, the introduction of the Common Core Learning Standards across New York State beginning in the 2012-13 school year left many districts unprepared for the high level of expected rigor. Rural students living in poverty, already lagging behind non-poverty peers, now find themselves facing a persistent academic achievement gap. Forgotten in the rollout of the CCLS initiative was the vital preparation for creating critical family and community awareness, needed to help students build social capital and confidence to engage in the higher level of rigor (Israel et al., 2001). Also missing was the preparation of leadership within schools, at all levels, in order to help schools close the achievement gap and improve learning for all students (Jacobson, 2011).

Research Question 3. The third research question asks, "How has the implementation of the Common Core Learning Standards and the aligned state assessments in grades three through eight for ELA and math affected the achievement gap for rural students living in poverty?" The extent of the historical achievement gap from 2011 through 2015 has remained relatively constant in both pre- and post-Common Core testing for both ELA and math assessments. The gap in ELA proficiency between poverty and non-poverty students persisted over the observed 5-year testing span for each grade level, with an average difference of 22.8% between the two student populations. Rigorous high stakes assessments coupled with inadequate skills in reading and writing reinforce the challenges faced by rural students living in poverty (Hopson & Lee, 2011). Results for math scores during the same testing period across grade levels produced an average difference of 21.9% in proficiency scores between rural students living in poverty and

their peers. While it can be noted that all students experienced a decrease in scores related to ELA and math high stakes tests between 2011 and 2015, the performance gap between poverty and non-poverty students remained relatively constant (Figures 9-20).

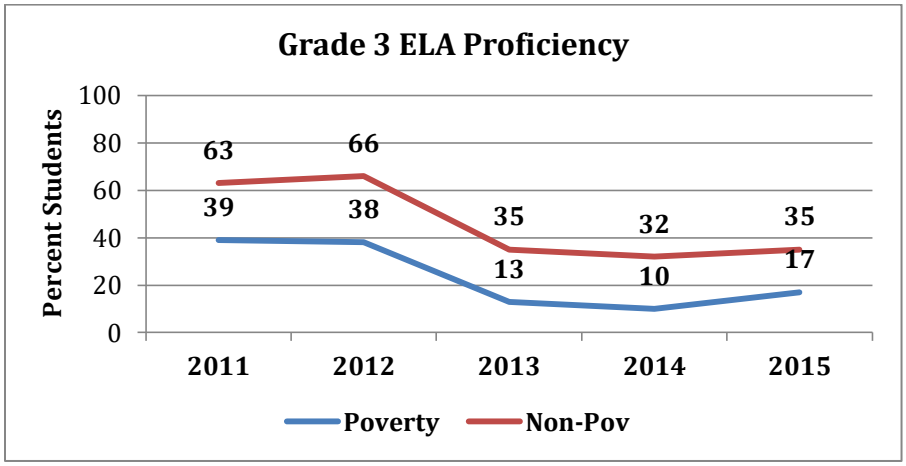

Figure 9. Grades 3 ELA proficiency (score of 65 or higher) for poverty and not-poverty Students

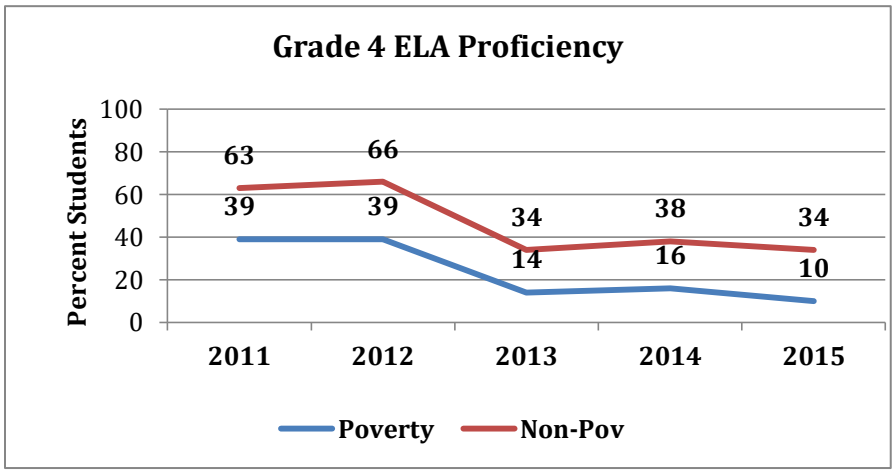

Figure 10. Grades 4 ELA proficiency (score of 65 or higher) for poverty and not-poverty students

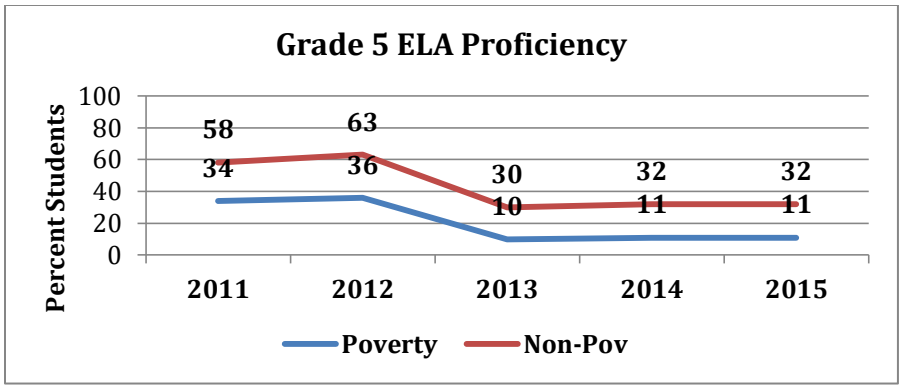

Figure 11. Grades 5 ELA proficiency (score of 65 or higher) for poverty and not-poverty students

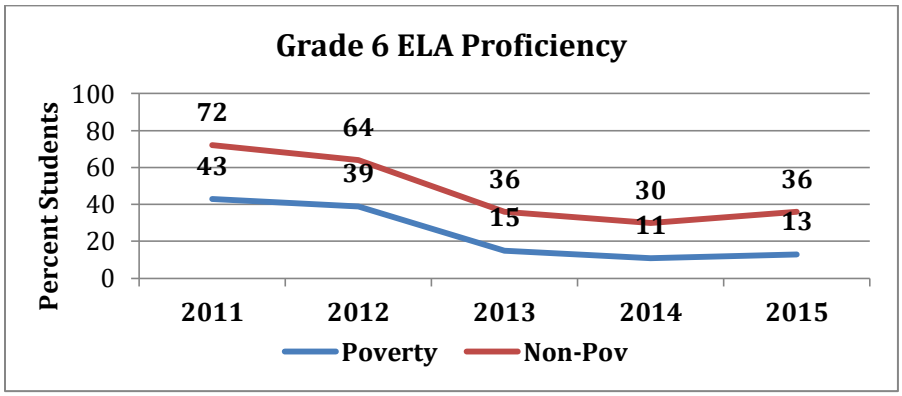

Figure 12. Grades 6 ELA proficiency (score of 65 or higher) for poverty and not-poverty students

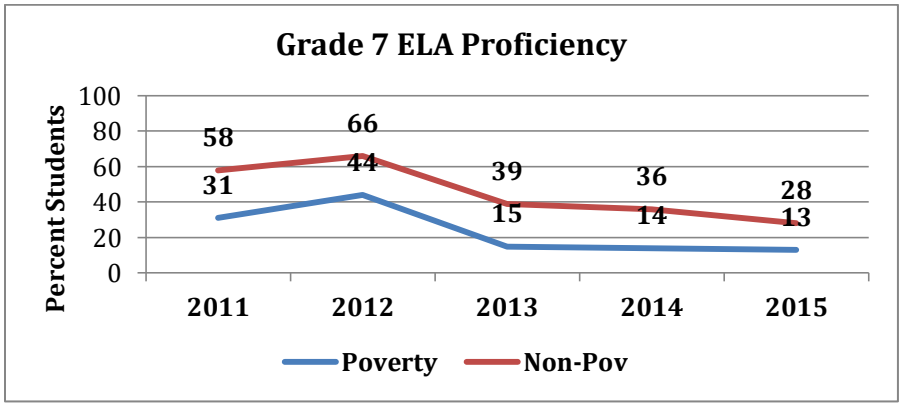

Figure 13. Grades 7 ELA proficiency (score of 65 or higher) for poverty and not-poverty students

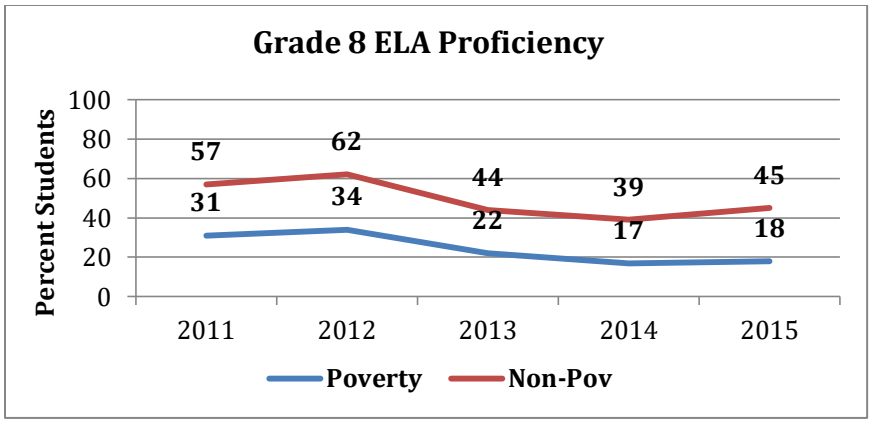

Figure 14. Grades 8 ELA proficiency (score of 65 or higher) for poverty and not-poverty students

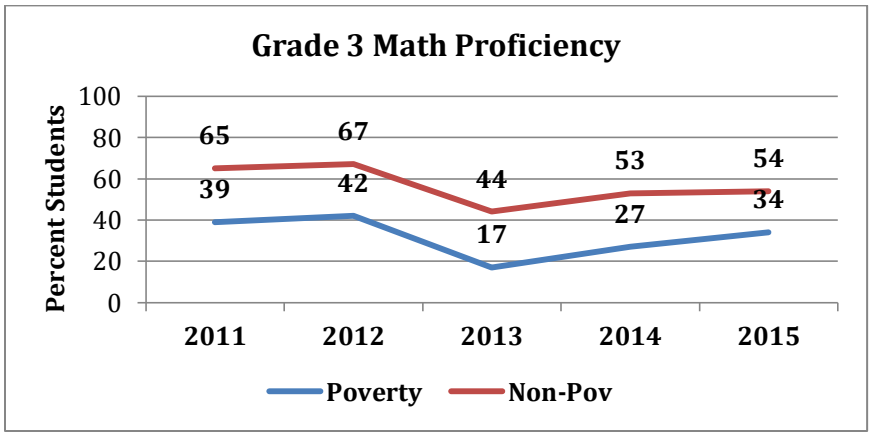

Figure 15. Grades 3 math proficiency (score of 65 or higher) for poverty and not-poverty students

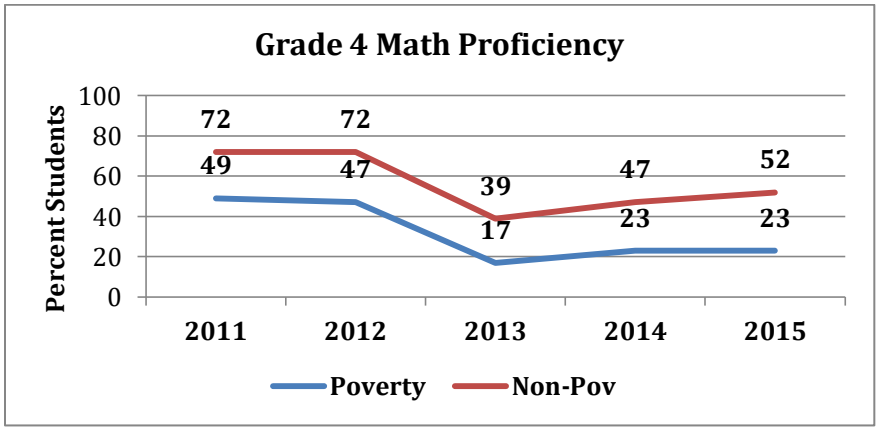

Figure 16. Grades 4 math proficiency (score of 65 or higher) for poverty and not-poverty students

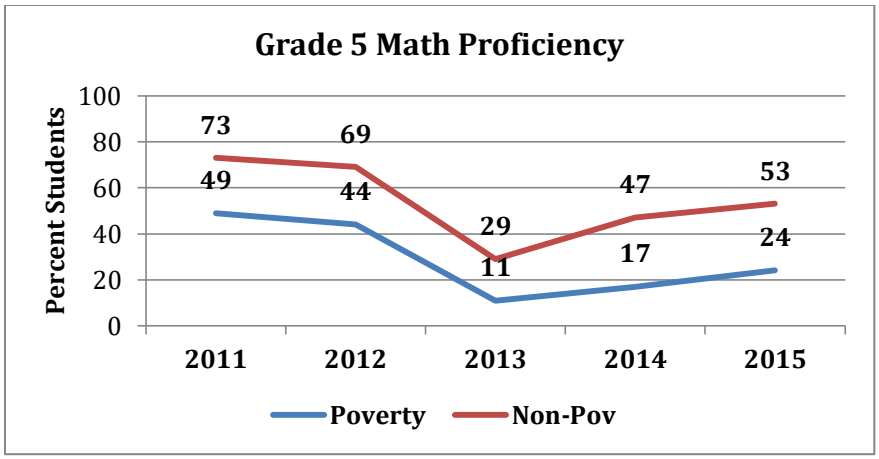

Figure 17. Grades 5 math proficiency (score of 65 or higher) for poverty and not-poverty students

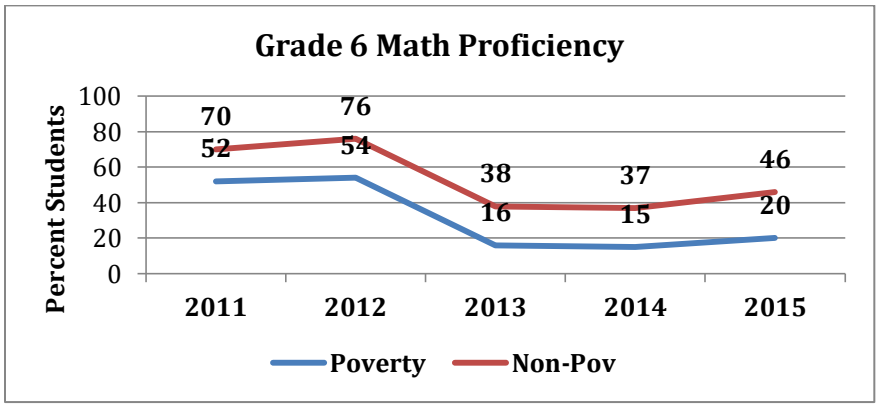

Figure 18. Grades 6 math proficiency (score of 65 or higher) for poverty and not-poverty students

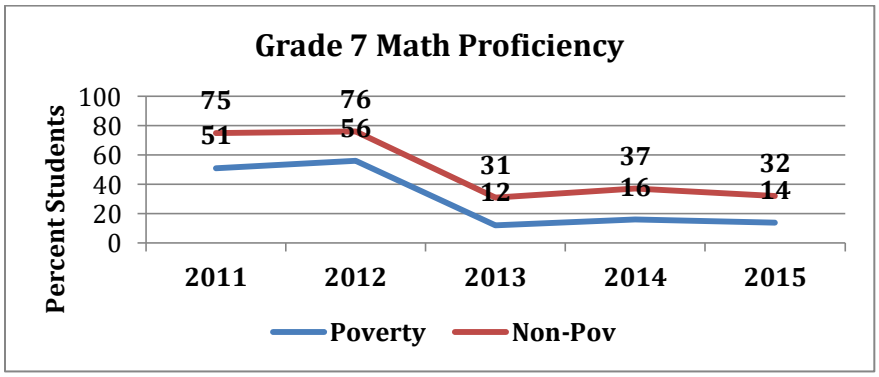

Figure 19. Grades 7 math proficiency (score of 65 or higher) for poverty and not-poverty students

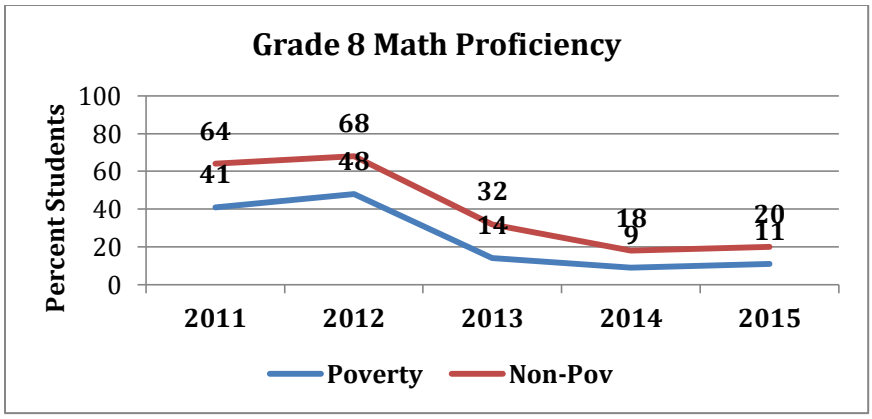

Figure 20. Grades 8 math proficiency (score of 65 or higher) for poverty and not-poverty students

Poverty remains a big problem for educators across Oswego County, NY, as evidenced by the persistent academic achievement gap. Teachers (45%) and support staff (56%), working more closely with students in classrooms, were more likely to see poverty as a big problem compared to principals (33%). However, Principals were more likely to attribute poverty to factors both within and outside of a family's control (56%), while teachers (42%) and support staff (45%) were more likely to associate poverty with a lack of effort and motivation (Figures 1, 2 &3).

Nearly 60% of all participants believed that it is more difficult to move out of poverty today than 10 years ago, although over 60% also believed that services provided to families of poverty are adequate. Eighty seven percent of district staff felt that there is an emotional cost to poverty, resulting in a decrease in vocabulary skills (86%). Yet, 83% felt that students and families from poverty are disconnected from the school environment and view education in a negative light (48%). As a result of these deeply held perceptions, 43% of district staff continues to believe that students living in poverty are more likely to have learning disabilities than their non-poverty peers (Figure 4, Tables 1 & 2).

Although the integration of the increasingly challenging state standards into ELA and math curriculum has resulted in a decreased performance for all students, it remains to be seen how students from both sub-set populations will adjust to the increased rigor in the years to come. With an increased focus on vocabulary, close reading, and reading more complex texts on NYS high stakes assessments, rural students living in poverty are at risk of remaining behind their peers, particularly since they typically enter school with a weak foundation in these areas (Bradley & Corwyn, 2001). Success for rural students living in poverty may depend on changing perceptions and awareness in order to sensitize staff to the learning constraints faced by these students.

Chapter 3

Intervention Literature Review

Perception surveys across Oswego County regarding the constraints to learning for rural, marginalized populations indicated some misunderstandings about the effects of poverty on students. In previous studies, notably health and social services, poverty simulations were shown to be effective in changing perceptions by providing individuals the experience of every-day struggles faced by families living in poverty (Patterson et al., 2011; Steck et al., 2011). Additionally, professional development focused on social equity and empathy has also been explored as a means to shift perceptions (Frank & Rice, 2017; Plucker & Peters, 2017). A combinational approach of a poverty simulation experience and professional development may produce a shift in perception and practices among educators. If such a shift could occur, it may help narrow the academic achievement gap for economically disadvantaged students.

Poverty Simulations as an Intervention for Raising Awareness

Education has a great impact on a student's life. Students who have a positive school experience often develop a greater belief in their potential. Creating an environment of educational equity is critical for all students, but particularly for marginalized populations. Social equity in the classroom requires teachers to recognize all students as valuable contributors to the learning environment. There are several mechanisms that might have been explored in order to shift the perceptual lens of educators toward social equity, such as examination of curricular materials, classroom practices that honor all student voices, or early childhood interventions that focus on improving vocabulary skills, giving rural students living in poverty more words to find their voice in the classroom. A poverty simulation was selected because it offers experiential learning.

Interventions focused on poverty simulations have been effective in raising awareness and changing perceptions in nursing programs (Noone et al., 2012), social work training (Krumer-Nevo et al., 2009), and teacher education (Steck et al., 2015). Yet, specific training for professionals working with individuals living in poverty is often missing from educational, health care, and surprisingly, even social work training. Comparing coursework for graduate schools in social work, only 12 of 50 schools examined offered one or more courses in the field of poverty (Cho et al., 2015; Harding et al., 2005). The lack of formal training means that educators are left to their own means through classroom experiences in order to understand how poverty affects learning. Living in poverty affects a child's view of themselves and others. Educators must become empathetic to the effects of poverty on a student's state of mind in order to separate living in poverty from the development of self-worth (Parrott & Budge, 2012). Language used in the classroom and in communication with colleagues can reveal a lot about the hidden biases that school personnel carry. For example, terms such as "high-poverty students" indicate a more permanent state of being that the term "students living in poverty" (Parrott & Budge, 2012). Teachers' personal beliefs have been shown to influence instruction and classroom management (Dos Santos, 2018). Perceptions based on incomplete knowledge of marginalized student populations may influence teachers' beliefs about students. Helping teachers become aware of perceptions and beliefs surrounding poverty may help deepen understanding.

Social Justice. Results from the needs assessment survey indicated that teachers' understanding of poverty and learning was incomplete. Because poverty simulations provide an experience of the constraints faced by families living under chronic stress, they may be an effective intervention for raising awareness among school district personnel and possibly serve

as a basis for instructional reforms leading to social justice. When participants engage in poverty simulations as an effective learning strategy, they also begin to reevaluate their beliefs in widespread social norms that contribute to, and perpetuate, many ideas surrounding poverty (Einhellig, Hummel, & Gryskiewicz, 2014).

A school district's response to poverty is conditioned by state and federal policies, but it can also be affected at the local level by community attitudes (Adeola, 2005). These perceptions and beliefs make their way into schools and classrooms and they have the potential to become part of teaching practices. Attitudinal beliefs reflected in the needs assessment for both teachers and administrators indicated that rural students living in poverty (a) were disconnected from the school environment (82.5%), (b) viewed education in a negative light (43.8%), and (c) were more likely to have learning disabilities (42.9%). These perceptions arise from a misunderstanding of how chronic stress resulting from a life in poverty affects cognitive development, school engagement, and student behaviors.

Historically, Americans have regarded the state of poverty as self-inflicted (Adeola, 2005; Shaw & Shapiro, 2002) and, as such, a culture of prejudice has been constructed. Efforts to increase poverty awareness and, therefore, improve social justice through reforms have proven effective. Poverty simulation participants were able to better understand widespread norms that contribute to injustices for many marginalized families (Einhellig et al., 2014). It has long been recognized that teacher beliefs have a strong correlation to students' academic success (Dufur, 2013; Hardre & Sullivan, 2008; Irvin, 2011; Wilcox, 2014). Providing teachers with the opportunity to develop an understanding of rural students living in poverty can help to build social empathy (Nickols & Nielsen, 2011) and enable a self-examination of their role in student success. The use of poverty simulations to engage thinking and discussion regarding constraints

on learning is currently an underutilized strategy in education (Cho, Convertino, & Khourey-Bowers, 2015). However, the experience of a poverty simulation in both the medical field (Einhellig, Hummel, & Gryskiewicz, 2015) and the field of sociology (Nickols & Nielsen, 2011) has been shown to produce a forceful paradigm shift in field practices.

Cultural Awareness. The development of poverty awareness requires that an individual have the opportunity to reflect, deconstruct, and discuss their current beliefs. As poverty rates continue to escalate across Oswego County, the need for professional development targeting poverty awareness becomes more critical. An understanding of one's own perceptions is a first step to developing empathy of another's (Banks, 2006). Building sensitivity and understanding of poverty requires an uncovering of attitudes and beliefs followed by an experience, event or immersion in another's culture (Zygmunt-Fillwalk & Clark, 2007). This is particularly true in many classrooms where educators may not have experienced poverty and may be unfamiliar with the depths of complexity surrounding rural poverty. Empathy is imperative if teachers are to connect with students in a meaningful way that promotes the greatest opportunities for learning (Knoell & Crow, 2013). Poverty simulation trainings may provide the first opportunity to experience and discuss the factors related to economic inequality and how these factors impact both teaching and learning (White, Mistry & Chow, 2013).

Simulations in Social Work. For social workers, who interact to a larger extent with individuals living in poverty, the experience of a simulation contributed to increased knowledge of the many challenges faced by those living in poverty (Zosky & Thompson, 2012). In particular, increased knowledge was gained regarding the financial pressures, scarcity of resources and emotional stressors of a life in poverty. This knowledge allowed social workers to become more sensitized when interacting with clients in the field. Yet, in many preparatory

programs, social work education addresses poverty in a superficial manner, leaving graduates ill-prepared to help those living in need (Krumer-Nevo, Monnickendam, & Weiss-Gall, 2009). As a result, the choice to work specifically with those living in poverty is a less popular career choice than working with other populations. In training social workers, as in education, providing opportunities to help students self-reflect on personal and cultural values is important. This practice of self-reflection diminishes the perception that people living in poverty have set characteristics that are unalterable (Krumer-Nevo et al., 2009). The effective use of simulations in social work has been found to "dispel myths about people who live in poverty, and encourage students to remain committed to challenging social and economic injustice" (Zosky & Thompson, 2012, p. 71).

Simulations in Health Care. Within the field of health care, a noted socioeconomic gulf between physicians and patients occurs when curricula and training materials do not address the specific needs of those living in poverty (Wallace, Miller-Cribbs, & Duffy, 2013). In a survey conducted among physicians-in-training, feelings of discomfort when caring for patients from poverty were reported. In some instances, physicians-in-training held beliefs that patients living in poverty were more difficult to work with, were often late to appointments, and were less concerned about health issues (Wallace et al., 2013). As more Americans fall below the poverty line each year, the task of educating health care workers becomes more acute. Poverty simulations offer the experiential training that highlights the physical, financial, and emotional constraints faced by student and families living in poverty.

Among nursing students, the experience of a poverty simulation resulted in a statistically significant shift in beliefs around the stigma of poverty (Patterson & Hulton, 2011). Following a simulation training, nurses discussed how poverty creates obstacles for an improved life by

social stigma and labeling. At the University of Colorado School of Nursing, simulations were used successfully to emphasize the importance of social justice as a value for graduates who are entering the health field profession (Einhellig et al., 2015)

Given the changing landscape of American demographics and the charge of medical personnel to care for a growing diversity of patients, improving understanding for patients living in poverty is critical to social justice. It is time that similar attention be paid to the field of teacher training, as the same changing demographics are affecting all classrooms across America.

Simulations in Education. Education is pivotal to increasing awareness regarding the constraints to learning faced by rural students living in poverty. Living under chronic stress causes heightened levels of cortisol that affect a child's ability to concentrate and regulate self-control mechanisms (Jensen, 2013). Resulting behaviors like a lack of motivation may be perceived by teachers as a disinterest on the part of students. Coupled with poor nutrition, inadequate housing, home violence and lack of basic resources, economically disadvantaged students need understanding that can only come from adults who are well educated and trained. Individuals involved with caring and educating low SES students may benefit from poverty simulation training.

Teacher and principal perceptions surrounding poverty and student achievement have been shown to influence motivating strategies in the classroom (Hardre & Sullivan, 2008). Because educators may be unfamiliar with the physical, financial, and cognitive constraints faced by rural students living in poverty, entertaining the concept that poverty could contribute to achievement gaps is not possible. In studies involving undergraduates and poverty simulations, Vandsburger et al. (2010) found that the activity changed perceptions and helped students to

better analyze contributors to poverty, in addition to gaining a deeper understanding of the complexities faced by the economically disadvantaged. This heightened understanding builds a bridge that helps educators work more effectively with individuals different from themselves by building empathy and self-examination. It also promotes discourse around best practice interventions that foster social justice so that teachers move beyond just wanting to help families and students living in poverty (Vandsburger et al., 2010). College students and preservice teachers exposed to poverty simulation training were better able to articulate the realities of the economically disadvantaged and discuss ways to improve curriculum to support struggling learners (Cho et al., 2015; Todd et al., 2011). The training led to the collaborative development of instructional materials that could better assist teachers in working with economically disadvantaged students in their classrooms. Although poverty simulations have been shown to be effective in a few studies, it remains an underutilized strategy in the field of education. Despite the ability to foster increased understanding of the conditions contributing to poverty (Nickhols & Nielsen, 2011), simulations remain outside of most pre-service teacher training programs.

Professional development focused on increasing awareness of poverty is needed in Oswego County, where rural poverty continues to escalate across all districts on a yearly basis. The Missouri Association for Community Action (2012) has developed a poverty simulation kit that allows participants to assume identities of students and family members living in poverty. The professional development provides participants the opportunity to experience the constraints of living in poverty, and helps participants gain understanding and insight into the lives of the economically disadvantaged. This simulation material has been used successfully in the field of social work, health care and education. Zosky & Thompson (2012) reported that the simulation

experience helped dispel myths about individuals living in poverty and encouraged professional commitment to social and economic injustice.

By raising awareness of poverty among educators, policies and instructional practices can be introduced that better support student learning and academic success for the economically disadvantaged. The experience of a poverty simulation may have the potential to open a door of understanding to the many ways in which poverty impacts cognition and the social-emotional well-being of children.

Professional Development as an Intervention for Changing Teachers' Perceptions

Childhood poverty imposes life-long challenges to students. These challenges require understanding on the part of school administrators and teachers. In order to effectively address the effects of poverty that can be reduced or reversed, school leaders and teachers must first understand how poverty interacts on the physiological, cognitive, emotional and social levels during critical periods of child development.

The nationwide increase in child poverty poses great challenges to schools and, in particular, teachers. An understanding of early brain and child development is needed in order to adequately prepare teachers to educate the changing population of students. The delivery of content is no longer enough to prepare our children for college and career. School administrators and teachers need to address the effects of poverty on all levels in order to maximize the educational window encompassing the PK-12 experience. Because poverty is a multi-faceted issue in education, understanding the effects on students' social, emotional, and intellectual well-being is imperative. This will require an understanding of brain development as it relates to education, with an emphasis on practices that improve and enrich the learning experience for rural students living in poverty. It will also require incorporating classroom strategies that

support a positive emotional climate for learning. Interventions that promote positive classroom environments, together with effective use of instructional practices and teacher professional development, can help rural students living in poverty better adapt socially (Yoshikawa, Aber, & Beardslee, 2012). Many schools now incorporate Social-Emotional Learning (SEL) programs for all students. These programs have shown improvements in math and reading achievements, decreases in disruptive behaviors, and sustained attention among learners (Greenburg et al., 2010; McCormick, Cappella, O'Connor, & McClowry, 2015). Fredrickson and Branigan (2005) have proposed a *broaden-and-build theory* of positive emotions; enhancement of positive emotions in students increases an individual's thought-action repertoire. The better a student feels about themselves, the more choices they envision as possibilities. On the opposite scale, negative emotions narrow an individual's thought-action repertoire. Providing teachers with strategies that can help shift a student emotionally toward a more positive self-image has the potential to impact a child throughout their life. Until both policy makers and program leaders embrace the new information from brain science in order to strengthen educational programs for children from poverty, the persistent cognitive and socio-emotional effects of poverty will remain a barrier to student achievement.

Teachers' beliefs of students living in poverty play a pivotal role in impacting classroom practices. Hecth and Greenfield (2002) found that teacher ratings of first grade students' emergent literacy skills based on verbal assertiveness, compliance, and self-control correlated with third grade literacy skills. Teachers in Oswego County mostly self-identify as middle-class and the realities of a life in poverty may be poorly understood. Weak teacher-student foundational relationships can influence both learning and motivation for low SES students (Hardre & Sullivan, 2008; Knoell & Crow, 2013), and also predispose teachers towards lower

expectations of academic achievement for poor students (Pas & Bradshaw, 2014; Thompson, McNicholl, & Menter, 2016). In some instances, teachers carry misconceptions about the physiological and cognitive constraints on learning faced by rural students living in poverty and over-identify such students as having a learning disability (Blair & Scott, 2002; Chandler, 2014).

Professional development targeting classroom practices that support enriched learning experiences, skill development, and content mastery can lead to increased student achievement and college and career readiness. Working memory, attention, and response inhibition are highly affected by SES. Classroom strategies focused on improving these components of executive function can improve reading comprehension and improve academic achievement (Corso, Cromley, Sperb, & Salles, 2016).

Teachers can also support rural students living in poverty to navigate the challenges of the home-school environment by building strong relationships with children (Hamre & Pianta, 2001). Such relationships are necessary to establish a safe classroom environment and a supportive socio-emotional culture conducive to learning (Madill, Gest, & Rodkin, 2014; Polleck & Shabdin, 2013).

Students living in poverty often display differences in neural processing, even when performance levels are equal to those of high SES students (Hackman et al., 2009). This suggests that allowing more time for information processing can help low SES students. For teachers, this means careful pacing of materials, along with the incorporation of scaffolding and differentiation. Other research indicates that behavioral interventions and focused instruction on basic skills may be desirable strategies for improving working memory for students (Elliot et al., 2010). Cooperative learning may also improve academic performance for low SES students due to the perceived support provided by teachers and peers (Ghaith, 2002).

Students experiencing chronic stress gain comfort when they feel that the classroom is a safe place to be (Blitz et al., 2020). Several models have been used to support students from high-trauma environments. The teaching of coping mechanisms, incorporating responsive teaching strategies, and mindfulness training are just a few ways schools attempt to support students from trauma (Cavanaugh, 2016).

Brain Targeted Teaching (BTT) (Hardiman, 2012) is one model that incorporates six domains for creating a pedagogical framework using research from educational and cognitive neuroscience. The potential benefits that neuroeducation can offer educators is vast and could transform educational practice when applied systematically (Goswami, 2006). Neuroeducation focuses on classroom strategies that incorporate understanding of brain plasticity (Ansari et al., 2012), developing growth mindsets (Dweck, 2006), and the concept of fluid intelligence (Jaeggi et al., 2008). The BTT model was designed for teachers as a system for developing classroom practices that are informed from the neuro- and cognitive sciences and centered on research-based effective instruction. The model specifically focuses on the social-emotional aspects of learning (physical environment and emotional climate), teaching and learning strategies (big picture design, content mastery, and knowledge application), and assessment.

An experimental study using the Brain Targeted Teaching model found gains in memory effects for students with learning needs (Hardiman, Rinne, & Yarmolinskaya, 2014). A strong working memory may be impaired for disadvantaged students given the high level of cognitive overload caused by a life in poverty. Classroom strategies that support engagement and improve working memory may be highly beneficial to this vulnerable population of students.

In another study, students taught with BTT demonstrated deeper conceptual understanding, more engagement, and better conceptual understanding that resulted in improved

state test performance (Bertucci, 2006). When applied to science instruction, the BTT model also helped to improve student engagement (Jenkins, 2018). Rural students living in poverty may appear unmotivated or disengaged when, in fact, the instructional content may be perceived as fragmented or unconsolidated because of a lack in foundational knowledge. The BTT model incorporates domains that work together holistically in creating a supportive learning environment. Strategies focused on the emotional and physical environment ensure that learning is taking place in a comfortable and equitable environment. The design of the learning experience focuses on a sequential organization of information that supports mastery of content, skills, and concepts. Students are then encouraged to apply knowledge in creative and innovative ways that allow for individualized expressions of learning. This is an important aspect of the model, especially for disadvantaged students, because it offers children choices in learning.

The BTT model has been shown to improve teacher efficacy in supporting low socio-economic minority students. Teachers taking part in a professional learning community focused on the BTT model became more reflective about their abilities to teach all students, especially low SES minority students (Jackson-Butler, 2017). Research conducted in rural populations in India also indicated a change in teacher efficacy using the BTT model in early childhood education (Walker, 2016).

Changing teacher perceptions of students living in poverty is a positive first step toward improved teacher efficacy. The dual-part approach of a poverty simulation followed by BTT professional development was selected for this purpose. Until teachers understand the full consequences of poverty on a physiological, cognitive, emotional, and social level, it is unlikely that the current achievement gap between low and high SES students will close. There are many ways that teachers can improve learning for rural students living in poverty. Better understanding

will lead to better classroom practices, and hopefully open a new world of possibilities for economically disadvantaged students. Poverty simulations have been shown to build empathy among educators (Todd et al., 2011), while targeted classroom strategies equip teachers with tools to remove some of the barriers to learning faced by students living in poverty. As teachers gain awareness of how economically disadvantaged students learn differently, they can become more empowered to change instructional practices resulting in a more equitable learning environment and a move toward social justice in the classroom.

Research Problem. District staff across Oswego County, New York recognize that poverty remains a large problem in educating all students. A needs assessment indicated that staff perceptions reflected misunderstandings of the detrimental effects of chronic stress on student development and learning. A two-part intervention was proposed that focused on professional development through (1) raising awareness of the constraints to learning faced by students from rural poverty through a poverty simulation (The Missouri Association for Community Action, 2012), and (2) professional development focused on the Brain Targeted Teaching Model (Hardiman, 2012) integrated with classroom strategies for teaching rural students living in poverty (Jensen, 2013).

Research Questions (RQ). The research questions to be addressed include**:**

RQ 1. To what extent are poverty simulations effective in changing perceptions surrounding poverty?

RQ 2. To what extent does professional development focused on classroom strategies for rural students living in poverty affect teacher perceptions regarding poverty and learning between treatment and control groups?

RQ 3. How are teachers' attitudes towards learning and poverty changed as a result of receiving both poverty simulation training and professional development on classroom strategies for teaching rural students living in poverty?

Chapter 4

Methods

Introduction

The study began with a needs assessment baseline survey administered to teachers at two rural elementary schools in Upstate NY. Results from the needs assessment identified teacher understandings of the constraints to learning faced by rural students living in poverty. The study consisted of two interventions: (1) a poverty simulation intended to increase awareness of the obstacles faced by economically disadvantaged students, followed by (2) a series of six professional development sessions intended to provide teachers with classroom strategies for supporting learning for rural students living in poverty. The purpose of this study was to examine the effect of the intervention package on teachers' perceptions of students living in poverty. Two elementary schools participated; one school served as the treatment school which participated in a package of both the poverty simulation and subsequent professional development sessions; the second elementary school served as control which received no training in either the poverty simulation or professional development classroom strategies. A post-survey was administered to both schools at the completion of the study (Appendix J).

Interventions

A two-part intervention was designed which incorporated a poverty simulation experience followed by targeted professional development sessions. The objectives of the dual approach were to raise teacher awareness, and provide some research-based tools, in supporting high-needs students. Given the rise in the numbers of rural students from high-poverty homes, the importance of supporting teachers' work is crucial to the issue of social justice in education (Einhelling, Hummel, & Gryskiewicz, 2015)

Poverty Simulation. The use of poverty simulations as an awareness-building tool for practicing teachers has been limited. Addressing the role that poverty plays in learning can be a valuable for experience for teachers in guiding their educational efforts. The poverty simulation used materials provided by the Missouri Association for Community Action (2012). Participants in the simulation experience the constraints and realities of people living with limited resources. Participants role-play being either a member of a family living in poverty, or a community service provider such as a nurse, a banker, a pawn broker, social service worker, or other community role. Roles are assigned randomly. Each simulation takes approximately three hours to complete.

The objective of the simulation is for the family to survive financially while navigating the many service systems and institutions that form part of the reality faced by many families from poverty. The ability of a family to make it through one simulated month of living on limited resources and limited transportation requires that household members work together to carefully allocate money and time. Participants soon learn that there are many difficult decisions to make involving priorities of shelter over food, or utilities over medical care.

At the end of the simulation there is a one hour debriefing period where all participants share and reflect on their experiences. For some "families," the experience is more negative than others. Often, some families lose their homes, have utilities turned off, or cannot manage to stretch finances adequately in order to eat three meals a day. This period of reflection, discussion and sharing is a very powerful part of the simulation, as participants begin to better understand the ways in which poverty affects individuals, families, communities, schools, and their students.

Through the poverty simulation, participants gained an understanding of the constraints faced by families from poverty. However, understanding the sociological, financial and

emotional effects of poverty is only the first step. Teachers can have a powerful impact on influencing rural students living in poverty (Knoell & Crow, 2013). Providing teachers with a set of practical strategies for teaching rural students living in poverty has been shown to have an effect on learning and achievement (Jensen, 2013).

Professional Development Sessions. A series of six Brain Targeted Teaching (BTT) professional development sessions were designed which focused on different areas of classroom practices as identified by Hardiman (2012). The six sessions each presented strategies that have been shown to enhance learning based on neuro- and cognitive sciences. Session 1 and 2 focused on the emotional climate and physical classroom environment. Creating a safe learning environment is an important first step for students experiencing chronic stress. These were followed by Session 3 that focused on cognitive development and big picture learning. Because students living in poverty often enter school with learning gaps, clear identification of learning objectives and targets assists students in building schema (Hammond, 2015). Teaching mastery of content, skills and concepts formed Session 4, with an emphasis on improving working memory. Chronic stress can inhibit working memory making it difficult for economically disadvantaged students to retain information (Jensen, 2013). Session 5 centered on application of knowledge and strategies that support higher order thinking. Classroom practices that provide diverse opportunities to be creative and apply knowledge foster learning. Students who are presented with attainable challenges in the classroom develop a greater sense of self-efficacy (Hammond, 2015). This is particularly important for marginalized students who may not have confidence in their own abilities. Finally, Session 6 focused on equity in student evaluation and assessment.

Hardiman (2012) has identified six areas of classroom practices that can enhance learning based on current knowledge from neuro- and cognitive sciences. These areas include (a) the emotional climate, (b) the physical environment, (c) big picture learning design, (d) mastery of content, skills, and concepts, (e) application of knowledge, and (f) evaluation and assessment. Using these categories as the framework for building professional development, a series of six professional development trainings (Appendix C) was delivered to teachers, teachers' aides and special education teachers at the intervention school in grades three, four and five at the intervention school.

Timeline. The research was conducted in the second half of the 2016-17 school year beginning in March and ending in June (Figure 21). An invitation to participate was sent to both the control and treatment elementary schools. A pre-survey was administered at both the control and treatment schools to assess baseline teachers' perceptions surrounding poverty and learning. In April, a poverty simulation was delivered at the treatment school, followed by six professional development sessions delivered to volunteer teams of teachers and teachers' aides in grades three, four and five at the treatment school. The professional development sessions were delivered to each team separately and were spaced approximately two weeks apart allowing teachers time to integrate the new practices. Each professional development session was assessed using a pre- and post-survey in order to determine any change in teachers' perceptions and classroom practices. The control school did not receive a poverty simulation experience, nor did they have any professional development training in the MBT sessions.

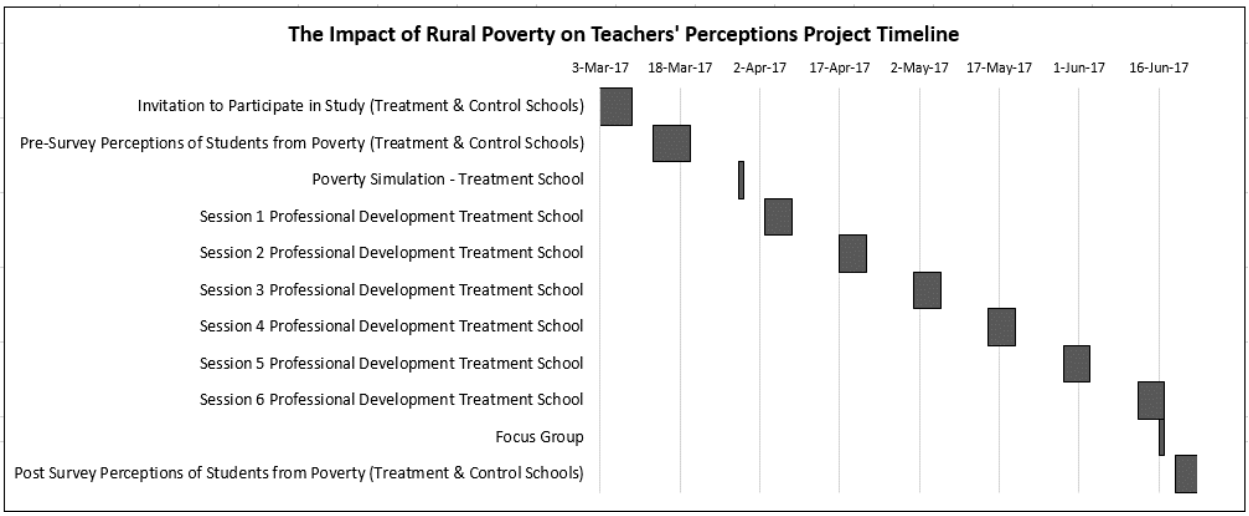

Figure 21. Timeline for Research Project: The Impact of Rural Poverty on Teachers' Perceptions

Research Design

Theory of Treatment: A two-part intervention targeting teachers' perceptions of rural students living in poverty was followed by six professional development sessions based on a neuroeducation pedagogical framework. The need for the intervention began with a growing concern about the academic gap in achievement scores between economically disadvantaged students and their peers. A needs analysis revealed the learning gap was persistent and pervasive across grade levels and content areas. Furthermore, underlying perceptions and understandings about poverty and learning were inaccurate. A theory of treatment focused on providing experiential learning using a poverty simulation and teacher professional development focused on best practices that support learning for marginalized students. The objective of this dual-part approach was to shift teachers' perceptions of poverty and change classroom practices (Figure 22).

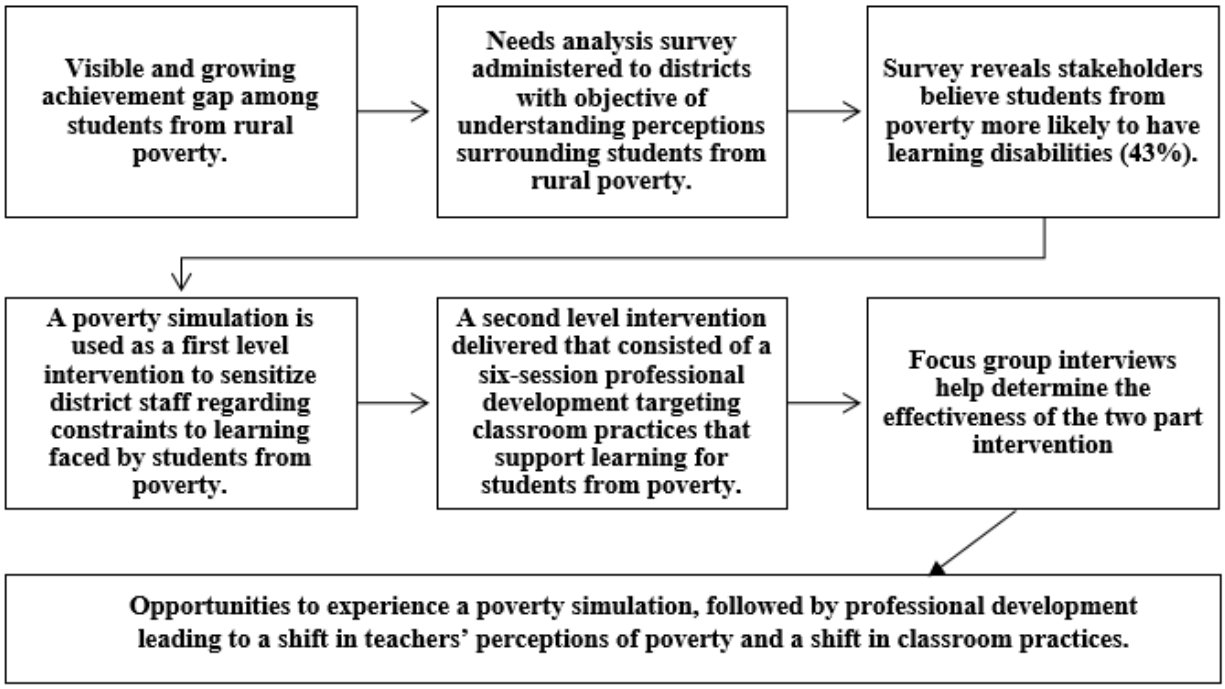

Figure 22. Integrative Model of Theory of Treatment

Logic Model: The logic model was focused at two levels: increasing awareness among school district personnel to the stress of poverty, and professional development strategies based on instruction shown to support learning for students living in poverty (Appendix K). The dual approach of the logic model centered on contextual issues related to social justice and educational equity.

Alignment of Theory of Treatment and Logic Model: Inputs. The underlying assumptions supporting the logic model stem from a needs assessment indicating that school personnel held beliefs about poverty and learning inconsistent with current research. One way to help educators understand the constraints to learning faced by rural students living in poverty is through professional development involving poverty simulation training. The Missouri Association for Community Action (2012) developed a poverty simulation kit that allows participants to assume identities of students and family members living in poverty. Simulations

can only offer a brief experience and limited understanding of how a life in poverty might affect students' ability to succeed academically. In order for a perception to change, additional inputs are needed. Teachers have a large effect on students' academic success (Tivan & Hemphill, 2005), it was therefore necessary to also provide professional development that focused on classroom strategies that support rural students living in poverty.

Outputs. The intent of the poverty simulation intervention focused on raising awareness about the constraints faced by students living in poverty and how the stress of poverty affects learning. Belief systems are not easily changed. Participation in a poverty simulation experience gave teachers an opportunity to understand the complexity of a life in poverty, with the objective of gaining a deeper understanding of the impact this has on students and learning. The coupling of a poverty simulation with a six-session professional development program provided teachers with some needed tools that might be used to support rural students living in poverty.

Outcomes. In studies involving undergraduates and poverty simulations, Vandsburger et al. (2010) found that the activity changed perceptions about the daily constraints faced by families living in poverty. Participants were better able to analyze situations regarding poverty and gained a deeper understanding of the complexities of poverty. Within Oswego County, where rural poverty continues to rise yearly, simulations may have the ability to increase awareness and shift beliefs in the short-term, while opening up deeper discussions for long-term solutions.

The movement from increased awareness to shifting beliefs requires additional support if teachers are to change behaviors in a way that will impact classroom practices. In the short term, the six professional development sessions were intended to provide opportunities for teachers to learn and practice strategies that support academic success for students living in poverty. Early

intervention for students living in poverty who are at risk for successfully mastering grade-level achievement in reading and math can greatly increase the likelihood of high school graduation (Wilcox, Angelis, Baker & Lawson, 2014). As a short-term outcome, the professional development sessions aimed to support teachers with alternative tools for addressing the learning needs of rural students living in poverty. Long-term outcomes could manifest as a desired change in instructional practices resulting from an increased awareness and shifting beliefs surrounding students living in poverty and learning.

The research used a transformative mixed methods design to examine change in teachers' perceptions of poverty and educational equity through the lens of teaching practices. The quasi-experimental design incorporated both control group and intervention group pretests (Shadish, Cook & Campbell, 2002).

Method

Participants. Two rural, elementary schools located in Oswego County, NY participated in the research project (Table 4). These schools were chosen because of their similarity in demographics and student populations. Both the intervention school and the control school represent rural communities with high levels of poverty. Economically disadvantaged students are identified in NY State as students receiving free or reduced lunch. Teachers, teachers' aides, and special education teachers in grades three, four, and five were eligible for participation from each school. District A served as the intervention site, while District B served as control. Approximately 22 teachers, teachers' aides and special education instructors participated from the intervention school, and 30 teachers, teacher's aides and special education instructors participated from the control school (Table 5). A majority of the teachers were from New York State and lived within, or close to, the school communities where they worked.

Table 4.

Student Demographics of Intervention School and Control School (2015-16 SY)

Student Demographics	Intervention School A*	Control School B*
Total Students	225 (100%)	370 (100%)
Economically Disadvantaged	119 (53%)	207 (56%)
White Students	216 (96%)	352 (95%)
English Language Learners (ELLs)	2 (<1%)	3 (<1%)
Students with Disabilities	32 (14%)	37 (10%)

Note: *Intervention school – Lura M. Sharp Elementary School, Pulaski, NY; Pulaski Middle School, Pulaski, NY. *Control school – Michael A. Maroun Elementary School, Phoenix, NY; Emerson J. Dillon Middle School, Phoenix, NY. Data retrieved from: data.nysed.gov and http://public-schools.startclass.com/

Table 5.

Teacher Demographics of Intervention School and Control School (2015-16 SY)

Teacher Demographics	Intervention School A*	Control School B*
Total Teachers	22 (100%)	30 (100%)
Gender (F:M)	20:2	27:3
Ethnicity	White (100%)	White (100%)
Age Range	23 - 63	27 - 65
Years Teaching	1 - 32	3 - 31

Note: *Intervention school – Lura M. Sharp Elementary School, Pulaski, NY; Pulaski Middle School, Pulaski, NY. *Control school – Michael A. Maroun Elementary School, Phoenix, NY; Emerson J. Dillon Middle School, Phoenix, NY. Data retrieved from: data.nysed.gov and http://public-schools.startclass.com/

Setting. The study occurred in Oswego County, New York. Of the 62 counties in New York State, Oswego ranks 12th as most affected by poverty. While many of the poorer counties may be found in large metropolitan areas, Oswego, and a handful of other counties, represent a growing number of rural poor across the state. Two elementary schools participated in this study. Each of the two elementary schools had similar levels of economically disadvantaged students

and predominantly served white, rural students. Each had a negligible English Language Learner (ELL) population and similar rates of students with disabilities (SWDs) as indicated in Table 4.

Both participating districts serve rural communities that are made up of predominantly white students, and both had between 53-56% economically disadvantaged students. Although both districts had begun to experience a slight change in demographics, populations of ELLs remained negligible for both districts. Students with disabilities (SWD) represented 14% at the intervention school and 10% at the control school. There was an approximately 1:10 teacher, teachers' aide and special education teacher to student ratio for the intervention school, and a comparable 1:12 ratio at the control school. The median teacher's salary for 2015 was $58,626 for the intervention school and $67,842 for the control district (Billmyer, 2016).

Historically, both of the participating elementary schools had experienced a gap in achievement performance between economically disadvantaged (ED) and not economically disadvantaged (Not ED) students in both English Language Arts (ELA) and math state assessments (Tables 6 & 7). In New York State, proficiency is determined by the percentage of students who reach Level 3 (first proficiency level) and Level 4 (student excels at grade level) for the ELA and math state assessments. Table 6 shows the total number of students tested for each of the participating school districts in ELA. Of those tested, fewer students identified as economically disadvantaged attained proficiency across all grade levels compared with their non-economically disadvantaged peers. The higher percentages for non-economically disadvantaged students represent many more students performing at the expected achievement level. Similar results were obtained when math high stake assessments were analyzed (Table 7).

Table 6.

Students Tested as Proficient in ELA (Level 3 and 4) for Economically Disadvantaged and Not-Economically Disadvantages Students at both Intervention and Control Schools 2015-16 SY

	Intervention School A			Control School B		
Proficiency	Gr. 3	Gr. 4	Gr. 5	Gr. 3	Gr. 4	Gr. 5
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*N (%)*
Total Tested	68	86	55	121	122	86
Proficient	19 (28%)	14 (16%)	10 (18%)	38 (31%)	25 (20%)	26 (30%)
ED	6 (9%)	4 (5%)	1 (2%)	18 (15%)	9 (7%)	10 (12%)
NED	13 (19%)	10 (11%)	9 (16%)	20 (16%)	16 (13%)	16 (18%)

Note: Data retrieved from: data.nysed.gov and http://public-schools.startclass.com/ *ED –economically disadvantaged, NED – not economically disadvantaged

Table 7.

Students Tested as Proficient in Math (Level 3 and 4) for Economically Disadvantaged and Not-Economically Disadvantages Students at both Intervention and Control Schools 2015-16 SY

	Intervention School A			Control School B		
Proficiency	Gr. 3	Gr. 4	Gr. 5	Gr. 3	Gr. 4	Gr. 5
	N (%)	*N (%)*	*N (%)*	*N (%)*	*N (%)*	*N (%)*
Total Tested	68	86	55	121	122	86
Proficient	27 (40%)	37 (43%)	20 (36%)	48 (40%)	56 (46%)	45 (52%)
ED	9 (13%)	13 (15%)	5 (9%)	23 (19%)	27 (22%)	22 (26%)
NED	18 (27%)	24 (28%)	15 (27%)	25 (21%)	29 (24%)	23 (26%)

Note: Data retrieved from: data.nysed.gov and http://public-schools.startclass.com/ *ED –economically disadvantaged, NED – not economically disadvantaged

Measures

Poverty Perception Instrument. To establish a baseline and assess perceptions of poverty, a survey instrument was used (Appendix C). Survey items were developed by the

Missouri Association for Community Action (http://www.communityaction.org) poverty simulation in order to assess perceptions of poverty. A 26-queston pre-survey estimated the prior state of understanding held by participants in four key domains: (a) poverty as a social problem (Domain 1), (b) poverty as a personal problem (Domain 2), (c) poverty as an economic problem (Domain 3), and (d) poverty as an educational problem (Domain 4). Responses were based on a Likert scale of one to five (5= strongly reflects what I believe or know to 1 = do not understand the statement). An identical post-survey was administered following the simulation experience in order to measure any shifts in perceptions that might have resulted (Appendix B).

The survey instrument used was a short form derived from the original Attitudes toward Poverty (ATP) scale (Atherton et al., 1993). The original survey tool comprises 37 items with a Cronbach alpha reliability measurement of 0.93 and a construct validity measure of 0.89. Several researchers have utilized short form variations of the ATP scale and have demonstrated high levels of internal consistency supporting evidence for validity (Yun & Weaver, 2010). Creating a 21-question short form, Yun and Weaver (2010) found an internal consistency ranging from .87 to .89 using correlational analysis and independent sample t-tests. These results align to recent studies using the 21-item short form by Clark, Sedlacek, & Watson (2016). Todd, Rosario, de Gusman, & Zhang (2011) created four levels of group attitude comparisons using the 16-question short form survey items supplied through the poverty simulation materials. Validity and reliability was confirmed for items and coded categories.

Professional Development Assessments. A criterion-based assessment was developed for each of the six professional development sessions (Appendices D-I) which focused on Brain Targeted Teaching. The pre- and post-surveys for each of the professional development sessions listed the introduced strategies and asked teachers to rate their level of knowledge and use of

each strategy. Item numbers for each of the survey instruments varied depending on the number of strategies discussed during each of the professional development session. Responses to survey items were on a Likert scale with responses of strongly agree (5), somewhat agree (4), don't know (3), somewhat disagree (2), and strongly disagree (1).

Focus Groups. Based on O'Leary's (2014. p. 218) definition of focus groups, teachers in grades three, four, and five from the intervention school were invited to participate in a group interview focused on discussion around the strategies presented for supporting economically disadvantaged students in the classroom. The interviewer acted as the facilitator during these discussions. Teachers, teachers' aides, and special education teachers in grades three, four, and five were eligible to participate in the focus groups that were held by grade level. Participation was voluntary. Each focus group meetings lasted about 40 minutes. Four questions formed the foundation of the discussions: (a) Do you believe you now have a different understanding of how poverty affects learning? If so, how has this training affected your understanding? (b) Do you believe that this training changed your classroom practices in any way? If so, how? (c) Were the individual strategies presented in the professional development sessions useful? If not, please elaborate; if so, please describe how they were useful to you. (d) If you felt that this training changed your classroom practices, in what ways do you think this affected your students?

The goal of the focus groups was to engage in richer discussion and expand on understanding the opinions of teachers as they engage in the work of addressing economically disadvantaged students in their classrooms.

Procedure

Poverty Simulation. Participation in the poverty simulation and subsequent professional development sessions at the intervention elementary school was voluntary. Teachers signed up

through their district online professional development portal via My Learning Plan. All teachers, teachers' aides and special education teachers in grades three, four, and five were eligible and invited to sign-up for the three-hour poverty simulation training. On the day of the scheduled event, the researcher served as the facilitator and set the venue up with event stations as specified in the simulation protocol. Teachers reported to the assigned venue, signed in, and were given a random name badge with their assigned "poverty family" in addition to a pre-survey (Appendix B). After participants found their "poverty family," they filled-out the Poverty Perception Instrument containing the 26 questions related to their current level of understanding of poverty. Participants listed their pseudo name from their poverty family on the survey form in order to match participant response. All surveys were anonymous. These were collected, and the data was later entered as a poverty perception baseline. Instructions for the simulation followed. This lasted approximately 30-45 minutes, including time to check for understanding of the simulation protocol. "Families" were given time to look through their packets of resources for participation in the simulation. Each family had differing amounts of resources including cash, transportation tickets, electronic benefits, bills, and other contingencies that formed part of their simulation experience. The simulation lasted one hour and was divided into four 15-minute segments that represented one week in real time. Participants were expected to fulfill a variety of obligations during the "one month" simulation such as maintaining or finding employment, paying bills, paying utilities, keeping families feed and children in school. There were 17 stations run by school personnel volunteers that were set-up around the perimeter of the simulation room. Each of these stations represented a different community service provider. Some of these providers included a quick cash office, department of social services, medical clinic, school, police office, Interfaith organizations, and pawn broker, to name a few. Participants in the simulation accessed

these services as needed, depending on their individual family circumstances. The objective for the participants was to keep their family and home intact until the end of the simulation.

The researcher kept track of time for each of the four 15-minute segments. Three minutes were allowed between each of the four segments of the simulation. These represented "weekends," and provided an opportunity for "poverty families" to reconvene, assess resources, and determine actions for the next week. At the conclusion of the simulation, the Poverty Perception Instrument was again given to participants as a posttest. All surveys were anonymous. The surveys were collected, and an hour-long debriefing session followed, allowing those who assumed various roles in the simulation to discuss their experiences.

The control school did not receive a poverty simulation experience, nor had they any type of in-district poverty awareness training in the past. Volunteer teachers in grades three, four, and five at the control school were invited to fill-out a Poverty Perceptions Instrument at the same time as the intervention school received the poverty simulation training. At the end of the 12 week intervention, participating teachers at the control school were again asked to fill-out a Poverty Perceptions Instrument that served as the posttest. The objective of the pre- and post-administration of the Poverty Perceptions Instrument at the control school was to ascertain any changes in perceptions that might have occurred as a result of any personal or professional growth outside of formal professional development. No formal in-district professional development focused on poverty awareness occurred at the control school during the 12-week intervention period.

Professional Development. Teachers, teachers' aides and special education teachers from the intervention school were invited to sign up for the six sessions of professional development related to strategies for supporting economically disadvantaged students in the

classroom. Teachers signed-up for the event through their district's online professional development portal. The elementary principal at the intervention school provided a schedule of grade-level meeting times when the professional development could be delivered. The session topics are identified in Table 8.

Table 8.

Professional Development Topics: Strategies for Supporting Economically Disadvantaged Students in the Classroom

Session	Professional Development Topic
1	Strategies for Creating an Emotional Climate for Learning
2	Strategies for Creating the Physical Environment for Learning
3	Strategies for Big Picture Learning Design
4	Strategies for Teaching Mastery of Content, Skills, and Concepts
5	Strategies for Teaching for Extension and Application of Knowledge
6	Strategies for Evaluation and Assessment

All of the professional development sessions focused on the six categories in the Brain Targeted Teaching Model (Hardiman, 2012) with modifications focused on students living in poverty (Jensen, 2013). Training began in session one with strategies for creating the emotional climate for learning. Creating a low-stress, safe environment helps to increase motivation and engagement for students living in poverty (Day & Burns, 2011; Reeves, 2012). During session two, participants gained an understanding of strategies for creating the physical environment for learning. Rural children living in poverty often develop emotion-regulatory problems due to exposure to chronic stress (Pollak, 2008). Creating a classroom environment that is conducive to

learning and that supports a mindset of growth can support the learning process. Session three focused on providing strategies for big picture learning design. Due to the lack of academic preparation for many students living in poverty, content connections may be difficult or missing (September et al., 2016). When students cannot connect knowledge to a big picture, meaning is lost. Strategies for focused alignment of the New York State ELA and math state standards with instruction and assessment were presented. Teachers also received training on other best practices that help connect learning for rural students living in poverty, namely the use of concept maps, graphic organizers, and personal learning goals and technology. Living under conditions of chronic stress has been shown to significantly affect both short- and long-term memory for students (Hackman et al., 2010). Strategies for teaching mastery of content, skills, and concepts was the focus of session four. Understanding the importance of incorporating intentional processing time, repeated exposure to content, chunking and spacing information, direct vocabulary instruction, and the use of multimedia formed the basis of this session. The connection of these practices in fortifying short- and long-term memory was discussed.

Session five focused on strategies necessary for the development of teaching for extension and application of knowledge. Economically disadvantaged students not only begin schooling at a disadvantage due to weak vocabulary and literacy skills, but they continue to fall behind as they progress through their academic years. Current research has shown that properly placed interventions can reverse some of the effects of poverty on cognition (Hackman et al., 2010). This session was intended to reinforce practices needed to develop critical thinking by developing skills such as compare and contrast, analysis and synthesis, classification of information, and the use of investigations and experimentation. The last session, six, focused on strategies for evaluation and assessment. Children living in poverty often lack the social capital

needed to develop a healthy self-esteem (Blitz, 2013). Students who appear disengaged or non-motivated may be having cognitive difficulties applying meaning to content, resulting in low academic performance. This session was designed to help teachers understand the importance of continuous feedback, active retrieval practices, using multiple modes of assessment, rubrics, and time for self-reflection for economically disadvantaged students.

The six Professional Development sessions were conducted by grade level and delivered during scheduled grade-level meetings. These meetings lasted approximately one hour in length, and were spaced approximately every two weeks. In total, 18 hours of professional development was delivered to the intervention school in the form of direct instruction using PowerPoint presentations and group discussion of the research-based strategies presented. Teachers' perceptions regarding the professional development was assessed using pre- and post-surveys for each session.

A pre-survey for the set of strategies presented at the beginning of each training session was used to determine teachers' current knowledge and use of classroom strategies for supporting economically disadvantaged students. A post-survey for this same set of strategies was given at the beginning of the subsequent meeting, giving teachers a two-week time period for implementation. Both the pre- and post-survey were coded for anonymity.

Participating teachers in grades three, four, and five at the control school did not receive any professional development regarding effective strategies for instructing students living in poverty during the entire school year. Volunteers from the control school were administered the same pre and post-survey as the control school.

Focus Group. Grade level teachers, teachers' aides and special education teachers in grades three, four and five at the intervention school were invited to participate in a focus group

designed to capture their classroom experiences in implementing the suggested practices for instructing economically disadvantaged students. A sub-group of the teachers, teachers' aides, and special education teachers who participated in the poverty simulation and professional development sessions consented to also participate in a focus group. The perspectives gathered through the focus group questions were anonymous with only grade levels identified. At the end of the six training sessions, the focus groups met by grade level to discuss their experience with the professional development training. The grade-level teams met for one hour in a designated teacher's room within the elementary school building. The focus questions were led by the researcher. Responses were transcribed by the researcher and subsequently coded for analysis.

Data Collection. Quantitative data was collected through pre- and post-survey assessments for both the poverty simulation and the professional development intervention. Focus group qualitative data was collected through transcription and subsequently response coded.

Fidelity of Implementation and Process Model. Self-reported teacher surveys were used to measure implementation of the research protocol. Teachers were asked to evaluate their understanding regarding concepts related to living in poverty prior to engaging in the poverty simulation and again immediately following the simulation. Similarly, preceding each of the six individual professional development sessions, teachers self-reported their baseline understandings and current level of implementation with regard to the strategies presented in each of the six training sessions. After having two weeks' of practice, teachers again self-evaluated their new understanding and implementation of selected strategies. All program components were delivered by the researcher, helping to insuring fidelity to the poverty simulation protocol and understanding of each classroom strategy, as described by the logic

model. Similarly, exposure and quality of delivery were monitored, controlled, and quantified by the researcher for all participant teachers at all grade levels insuring equitable dosage for treatments. Selection-treatment interactions were minimized through careful selection of the treatment and control schools insuring no similar interventions had previously been administered.

Data Analysis. The following analysis were used for this study.

Table 9.

Statistical Analysis Methods

	Research Question	Data Gathering Tool (Participants)	Analysis
RQ 1	To what extent are poverty simulations effective in changing perceptions surrounding poverty?	Pre- and Post-surveys involving a poverty simulation: IV 1 (Treatment and Control)	Paired sample t-test Mixed-model ANOVA
RQ 2	To what extent does professional development focused on classroom strategies for students living in poverty affect teacher perceptions regarding poverty and teaching between treatment and control groups?	Pre- and Post-surveys involving professional development: IV 2 (Treatment Only)	Paired sample t-test Mixed-model ANOVA
RQ 3	How are teachers' attitudes towards learning and poverty changed as a result of receiving both poverty simulation training and professional development on classroom strategies for teaching students living in poverty?	Focus group questions (Treatment Only): • Do you believe you now have a different understanding of how poverty affects learning? If so, how has this training affected your understanding? • Do you believe that this training changed your classroom practices in any way? If so, how? • Were the individual strategies presented in the professional development sessions useful? If not, please elaborate, if so, please describe how they were useful to you. • If you felt that this training changed your classroom practices, in what ways do you think this affected your students?	Explanatory framework for answering focus questions Identification of respondent clusters, causality, and related themes

A paired sample t-test was used to determine if a significant shift in perceptions surrounding poverty occurred as a result of experiencing poverty simulation training, as measured by a pre- and post-surveys administered to participants. The design for this intervention was quasi-experimental, measuring changes in perceptions from pre-training to post-training surveys completed by all participants. This design was chosen because it gave an initial indication of the effectiveness of the poverty simulation training to shift perceptions regarding constraints to learning faced by students living in rural poverty. Average pre- and post-test means on each of the 26 questions items were compared by question, and calculated t and P values were determined. As the survey was composed of questions that comprise four domains related to poverty, these domains were further analyzed using a mixed model ANOVA. The analysis of variance aimed to detect differences of perceptional shifts among participants within the four domains of (a) poverty as a social problem, (b) poverty as a personal problem, (c) poverty as an economic problem and (d) poverty as an educational problem. Understanding the basis for underlying misconceptions regarding poverty can better identify appropriate short and medium-term strategies for educating professionals who work with students from rural poverty.

The professional development trainings were evaluated using a paired-sample t-test in order to determine any changes in teaching practices resulting from each of the six training sessions. Pre- and post-survey responses were further analyzed using a mixed-model ANOVA in order to determine possible differences in effectiveness of some training sessions over others.

The responses from the focus group participants were coded using an explanatory framework (Gale et al., 2013). Identification of responses were clustered by common themes and analyzed by percent response within themes. Focus group data was analyzed by frequency,

extensiveness, intensity, specificity and central concept as described by Wholey, Hatry & Newcomer (2010).

Limitations

The degree to which this research is applicable to other high poverty groups such as inner cities or urban areas is limited. In such areas, other factors related to poverty and learning may be present that were not observed in this study. The population in this study was highly homogeneous for race, being largely composed of white students and teachers. The rural setting where this research occurred may not be reflective of other geographical rural settings. Additionally, the teachers participating in this study represented grade levels three, four, and five. Results might vary for other grade-level teachers. The threats to external validity have been noted by Campbell & Stanley (1963). The representativeness of the sample population is limited to other similar rural populations.

Pretest-treatment interference may result from the pre-surveys administered for both the poverty simulation training and the professional development sessions. Exposure to the poverty simulation pretest as well as the six professional development pretests may influence subsequent learning for participants.

Multiple-treatment interference may result from a carry-over effect as participants move from professional development training session 1 through session 6. There is a possibility that participants may anticipate an expected change in attitude and practice regarding the presented strategies when competing each session. Because participants will be asked to self-report on classroom practices, a threat to reliability and external validity is possible. Similar limitations have been noted by White & Chant (2014). Engagement in a poverty simulation where participants must "role-plan" may also influence outcomes as this type of experiential learning

may not be in alignment with some participants' learning styles (Pettenger, West, & Young, 2014).

Selection-treatment interactions may pose a threat to external validity due to the selection of the participating schools and teachers. Although the control and intervention schools were chosen based on common characteristics, results may not extend to other dissimilar schools or participants. Similarly, because sign-up for the poverty simulation training and the professional development sessions is voluntary, those participants involved may represent a population of individuals who already "have a high level of knowledge, understanding and interest in poverty-related issues" (Strasser et al, 2013).

Specificity of variables poses another threat to external validity. Given that the population of participants is of similar economic background and homogeneous for ethnicity, results may be limited for other educational environments with a larger economic and ethnic diversity. This may also limit generalizability to other rural environments that may not be similarly homogeneous (White & Chant, 2014).

Experimenter effects may not be precluded as a threat to external validity. The facilitation for the poverty simulation, all six of the professional development sessions, and the focus groups were conducted by the researcher. It cannot be discounted that experimenter personal attributes may affect teacher behavior, perceptions and outcomes as relationships develop over the extent of the research period.

Finally, reactive arrangements such as the Hawthorne effect may influence outcomes. Since no classroom observations occurred, participants may have agreed to implement strategies to address economically disadvantages students in their classrooms but may have done so only sporadically or inconsistently. In this case, any detected outcomes may likely be temporary and

not have long-lasting effects on teaching practices. This threat was noted in poverty simulation research conducted by Browne & Roll (2016).

Chapter 5

Results and Discussion

The objectives of this research were to investigate how exposure to a poverty simulation and subsequent professional development trainings influenced the perceptions among teachers and teachers' aids of the impacts of poverty and learning. The design for the intervention was quasi-experimental using both a control group and pretests (Shadish, Cook & Campbell, 2002). Quantitative data were collected through pre- and post-survey assessments for both the poverty simulation and the professional development intervention. Focus group qualitative data was response coded and analyzed by frequency, extensiveness, intensity, specificity, and central concept as described by Wholey, Hatry & Newcomer (2010).

Research Question 1: To what extent are poverty simulation effective in changing perceptions surrounding poverty?

Research question one (RQ1) addressed the extent to which simulations are effective in changing teachers' perceptions of poverty and student learning. A pre-and post-Poverty Perceptions Instrument was administered to participants in both treatment and control groups within similar timeframes (Appendix B).

An independent sample t-test was conducted to compare pre-survey means for each condition (treatment and control). There were no significant differences in pre-survey means between groups, indicating similarities of groups on this measure prior to intervention (Table 10).

Table 10.

Pre- and Post-Survey Analysis for Treatment and Control Groups

	Pre-Survey		Post-Survey		Totals Across Conditions	
	M (SD)	*n*	*M (SD)*	*n*	*M (SD)*	*n*
Treatment	49.40 (6.14)	15	53.80 (6.70)	15	103.20 (6.27)	15
Control	48.00 (6.38)	9	47.44 (5.13)	9	95.44 (4.42)	9
Totals	48.88 (6.13)	24	51.42 (6.81	24		

A mixed-model ANOVA was performed with a within-subjects factor of condition (pre-survey, post-survey) and a between-subjects factor of group (treatment, control) in order to compare the main effects of condition and group and the interaction between condition and group on teachers' perceptions of poverty. Results found no significant main effect of time ($F(1, 22) = .68$, $p = .417$, $\eta^2_p = .03$), indicating no significant difference between pre and posttest across groups. However, there was a significant main effect of group across time ($F(1, 22) = 10.53$, $p = .004$, $\eta^2_p = .32$), indicating the treatment group had more positive perceptions of poverty ($M = 51.60$, $SD = 3.14$) compared with the control group ($M = 47.72$, $SD = 2.21$). The predicted interaction among conditions and group was not significant ($F(1, 22) = 1.14$, $p = .298$, $\eta^2_p = .05$), indicating teachers' perceptions did not vary depending on condition (pre- or post-survey) and group (treatment or control).

To further investigate impact of treatment, paired samples t-tests were conducted to compare pre- and post-survey perceptions in the full sample across each of the four survey domains (Social, Personal, Economic, or Educational Problem) as well as survey total. There were no significant differences ($p < .05$) in pre- and post-survey summative domain scores, indicating perceptions of poverty as a social, personal, economic, or educational problem and

survey perceptions overall did not differ for the group as a whole across the two time points (Table 11). Results indicate that participants in the treatment condition scored higher across two of the four domains after experiencing the poverty simulation.

Table 11.

Means and Standard Deviations for Pre- and Post- Poverty Simulation Questions by Domain

Poverty Lens	Pre-Survey		Post-Survey		Totals	
	M (SD)	*n*	*M (SD)*	*n*	*M (SD)*	*n*
Social Problem						
Treatment	22.13 (3.48)	15	25.27 (3.59)	15	47.40 (3.64)	15
Control	22.56 (4.10)	9	21.67 (2.18)	9	44.23 (3.89)	9
Total	22.29 (3.64)	24	23.92 (3.56)	24		
Personal Problem						
Treatment	13.73 (2.02)	15	14.13 (1.60)	15	27.86 (1.77)	15
Control	12.44 (1.24)	9	13.44 (2.07)	9	25.88 (2.09)	9
Total	13.25 (1.85)	24	13.88 (1.78)	24		
Economic Problem						
Treatment	9.67 (1.68)	15	11.33 (1.91)	15	21.00 (2.17)	15
Control	9.33 (2.45)	9	9.33 (2.06)	9	18.66 (2.34)	9
Total	9.54 (1.96)	24	10.58 (2.17)	24		
Educational Problem						
Treatment	3.87 (1.88)	15	3.07 (0.96)	15	6.94 (2.25)	15
Control	3.67 (1.94)	9	3.00 (1.22)	9	6.67 (2.06)	9
Total	3.79 (1.86)	24	3.04 (1.04)	24		

Next, a series of mixed-model ANOVAs were performed to examine between group (treatment vs. control) differences in perceptions of poverty at each time point (pre-survey, post-survey) across each of the four domains (poverty as a Social, Personal, Economic, and Educational problem).

Domain 1. For perceptions of poverty as a social problem, there was no significant main effect of condition ($F(1, 22) = 0.84$, $p = .368$, $\eta^2_p = .04$), no significant main effect of group ($F(1, 22) = 4.07$, $p = .056$, $\eta^2_p = .16$), and no interaction ($F(1, 22) = 2.71$, $p = .114$, $\eta^2_p = .11$).

Domain 2. For poverty as a personal problem, there was no significant main effect of condition ($F(1, 22) = 1.22$, $p = .282$, $\eta^2_p = .05$), there was a significant main effect of group across conditions ($F(1, 22) = 6.16$, $p = .021$, $\eta^2_p = .22$), and no significant interaction ($F(1, 22) = 0.22$, $p = .641$, $\eta^2_p = .01$). Examination of group means for the difference between conditions indicated the treatment group had more positive perceptions of poverty as a Personal Problem ($M = 27.86$, $SD = 1.77$) compared with the control group ($M = 25.88$, $SD = 2.09$).

Domain 3. For perceptions of poverty as an economic problem there was no significant main effect of condition ($F(1, 22) = 1.46$, $p = .240$, $\eta^2_p = .06$), there was a significant main effect of group across conditions ($F(1, 22) = 6.13$, $p = .022$, $\eta^2_p = .22$), and no significant interaction ($F(1, 22)] = 1.46$, $p = .240$, $\eta^2_p = .06$). Examination of group means for the difference between conditions indicated the treatment group had more positive perceptions of poverty as an economic problem ($M = 21.00$, $SD = 2.17$) compared with the control group ($M = 18.66$, $SD = 2.34$).

Domain 4. For perceptions of poverty as an educational problem, there was no significant main effect of condition ($F(1, 22) = 2.55$, $p = .125$, $\eta^2_p = .10$), no significant effect of

group ($F(1, 22) = 0.08$, $p = .775$, $\eta^2_p = .00$), and no significant interaction ($F(1, 22) = 0.02$, $p = .886$, $\eta^2_p = .00$).

Research Question 2: To what extent does professional development focused on classroom strategies for rural students living in poverty affect teacher perception regarding poverty and learning?

Research question two (RQ2) addressed teacher professional development on classroom strategies for supporting students living in poverty (see Table 7). Treatment participants attended six professional development sessions and completed a self-evaluative survey before each training session began, and again two weeks later after attending the professional development and practicing the strategies presented. Means and standard deviations for each of the six pre- and post-session surveys are presented in Table 12.

Table 12.

Professional Development Mean and SD for Pre- and Post-session Survey

Session Strategies	Pre-Survey *M (SD)*	Post-Survey *M (SD)*
Creating an Emotional Climate for Learning	4.52 (.27)	4.47 (.28)
Creating the Physical Environment for Learning	4.10 (.45)	3.98 (.47)
Big Picture Learning Design	4.28 (.48)	4.48 (.32)
Teaching Mastery of Content, Skills, and Concepts	4.27 (.35)	4.33 (.43)
Extension & Application of Knowledge	4.27 (.36)	4.49 (.31)
Evaluation & Assessment	4.37 (.40)	4.46 (.41)

A series of paired-samples t-test was conducted to compare pre- and post-session survey means for all professional development sessions. There was no significant difference in pre- and post-survey means for *Session 1:* Strategies for Creating an Emotional Climate for Learning, *Session 2*: Strategies for Creating the Physical Environment for Learning, *Session 4*: Strategies for Teaching Mastery of Content, Skills, and Concepts; nor *Session 6*: Strategies for Evaluation and Assessment.

A paired-samples t-test examining pre- and post-session survey means for *Session 3:* Strategies for Big Picture Learning Design, revealed a significant difference in pre- ($M = 4.28$, $SD = .48$) and post- ($M = 4.48$, $SD = .32$) session responses ($t(15) = -3.04$, $p = .008$), with an increase in survey average response scores following Session 3.

Pre- and post-session survey means for Session 5: Strategies for Teaching for Extension and Application of Knowledge, were also examined in a paired-samples t-test. There was a

significant differences in pre- (M = 4.27, SD = .36) and post- (M = 4.49, SD =.31) session means ($t(16) = -2.41$, $p = .028$) where the average response scores increased after professional development training.

Research Question 3: How are teachers' attitudes towards learning and poverty changed as a result of receiving both poverty simulation training and professional development on classroom strategies for teaching rural students living in poverty?

Treatment participants were invited to participate in a focus group at the conclusion of the professional development series. Fifteen teachers volunteered to participate in the focus group. Focus group qualitative data was response coded and analyzed by frequency, extensiveness, intensity, specificity, and central concept as described by Wholey, Hatry & Newcomer (2010). Like units were identified within responses and given a descriptor. Descriptors were grouped by categories, and subsequently examined for emerging themes. This method allowed for within grade level and between grade level analyses.

Focus Question 1: Do you believe you now have a different understanding of how poverty affects learning? If so, how has this training affected your understanding?

For the first part of Focus Question 1, 67% (n = 15) of treatment participants indicated that the poverty simulation and professional development sessions helped them develop an understanding of how poverty affects learning.

For the second part of Focus Question 1, respondents (n = 15) who replied positively to part one were asked to elaborate on how their understanding of poverty and learning had changed. Comments were analyzed by specificity and frequency. Participant responses are listed in Table 13. Participants indicated that the poverty simulation and professional development sessions aided in their understanding by (a) serving as a reminder of the effects of poverty on

learning, (b) deepening knowledge of how cortisol levels influence brain activity and learning, (c) showing the relevance of creating comfortable learning environments, (d) drawing relevance to the importance of spiraling material for student learning, and (e) diversifying teaching strategies.

Table 13.

Focus Group Comments Explaining How Professional Development Affected Teachers' Understanding of the Effects of Poverty on Learning

Response Category	*% (n)*
The training served as a reminder.	40.0 (6)
I understand the effects of cortisol on brain activity.	40.0 (6)
I understand the importance of creating a comfortable learning environment.	40.0 (6)
I understand the importance of spiraling student learning.	20.0 (3)
I understand the importance of diversifying teaching strategies.	33.3 (5)

Focus Question 2: Do you believe that this training changed your classroom practices in any way? If so, how?

Focus Question 2 asked participants (n = 15) to reflect on changes in their classroom practices following the poverty training and subsequent professional development sessions focused on rural students living in poverty. Eighty percent (n = 12) of all participants agreed that they had made some changes in classroom practices.

Part 2 of Focus Question 2 asked respondents to describe how the poverty simulation and professional development trainings helped teachers change their classroom practices. Comments were analyzed by specificity and frequency. Participant responses are listed in Table 14. Participants indicated that the training helped them change classroom practices by (a) reflecting and reevaluating current practices, b) reinforcing best practices, (c) focusing on desired outcomes for rural students living in poverty, (d) incorporating new strategies focused on rural students living in poverty, and (e) improving teacher-student relationships.

Table 14.

Focus Group Comments Explaining How Professional Development Changed Classroom Practices

Response Category	*% (n)*
Helped me reflect and re-evaluate my current practices.	20.0 (3)
Helped me to reinforce best practices in my classroom.	46.7 (7)
Helped me focus on desired outcomes for rural students living in poverty.	26.7 (4)
Taught me new strategies for helping rural students living in poverty.	46.7 (7)
Helped me improve my relationships with rural students living in poverty.	26.7 (4)

Focus Question 3: Were the individual strategies presented in the professional development useful? If so, please describe how they were useful to you.

For the third Focus Question, participants were asked to reflect on the usefulness of the classroom strategies supporting learning for rural students living in poverty presented in each of the six sessions. Most participants (93.3%, $n = 14$) agreed that the strategies learned were useful (Table 15).

Table 15.

Teachers Indicating That Individual Strategies Presented were Useful

	Positive Change *% (n)*	No Change *% (n)*
Participants	93.3 (14)	6.6 (1)

When asked in what way the strategies were useful to teachers, responses were grouped into five categories. Participant responses are listed in Table 16. Teachers indicated that the strategy training sessions were helpful to them because (a) they reinforced good teaching practices, (b) they were easy to implement, (c) they solved short-term classroom issues, (d) they provided long-term classroom solutions, and (e) implementation time was included in the structure of the trainings (Table 16).

Table 16.

Focus Group Comments Explaining How the Strategy Sessions Were Useful

Response Category	*% (n)*
The strategies reinforced good teaching practice.	33.3 (5)
The strategies were easy to implement.	33.3 (5)
The strategies solved short-term classroom issues.	33.3 (5)
The strategies provided long-term classroom solutions.	33.3 (5)
Time between sessions allowed me to practice the strategies.	33.3 (5)

Focus Question 4: If you felt that this training changed your classroom practices, in what ways do you think this affected your students?

As a final focus question, participants were asked how the poverty simulation and professional development training affected their students. After coding comments by specificity and frequency, five categories emerged reflecting teachers' perceptions. Two teachers from grades 4 and 5 each felt that the training had no effect on students. The response categories indicating that teachers did feel students were affected by the training indicated (a) relationships improved, (b) changes in teaching practices were noticed by students, (c) students seemed to benefit academically, and (d) students' seemed to benefit emotionally (Table 17).

Table 17.

Focus Group Comments Explaining How the Strategy Sessions Affected Students

Response Category	*% (n)*
I don't think there was any effect on my students.	13.3 (2)
Improved relationships with my students.	13.3 (2)
Changed my teaching practices in a way that students noticed.	26.6 (4)
Students seemed to benefit academically from the embedded strategies.	26.6 (4)
Students seemed to benefit emotionally from the embedded strategies.	20.0 (3)

In summary, results indicate that the experience of a poverty simulation may have some effect in shifting teachers' perceptions regarding poverty. In particular, teachers who experienced the poverty simulation gained more understanding of the economic and personal problems experienced by individuals from poverty. When further provided with classroom strategies for supporting rural students living in poverty, teachers were more likely to shift instructional practices around big picture learning design and teaching for extension and application of knowledge.

Discussion

This research focused on the hypothesis that teachers who participated in a poverty simulation followed by professional development sessions supporting students' academic success would lead to a shift in teacher perceptions and practices regarding students from rural poverty. The two-part approach was designed to raise teachers' awareness to the constraints faced by rural students living in poverty while also providing them with some classroom tools to make instruction more relevant to disadvantaged students.

This section will discuss the results of the study, synthesized with the current literature, in order of the Research Questions.

Research Question 1: To what extent are poverty simulation effective in changing perceptions surrounding poverty?

Poverty simulation can provide a promising approach to understanding poverty for teachers because they allow for perceptual changes through experiential learning (Browne & Roll, 2016). However, poverty simulations alone are inadequate in helping teachers address the critical social issues of poverty and their effect on student learning (Browne & Roll, 2016). For this to occur, teachers must also be provided with professional development that targets strategies known to be effective in shifting instructional practices in the classroom.

The use of poverty simulations as a means to raise awareness has had varying effects depending on the sector of participants involved. In the field of public health, nursing students experienced shifts in perceptions with regard to social justice and equitable health care (Einhellig et al., 2015; Clark et al., 2016). Social workers indicated a shift in empathy following a poverty simulation experience (Nichols et al., 2011). Among the educators involved in this research, a

poverty simulation experience resulted in a shift of pre- and post-Poverty Perceptions means in thinking about the personal and economic hurdles that a life in poverty imposes.

Poverty as Personal Problem. The conditions of poverty and disadvantage occur frequently as media topics. Often these discussions can have a significant impact on the consciousness and ways that the public thinks about poverty (Pemberton, Fahmy, Sutton, & Bell, 2015). The constraints of a life in poverty, coupled with society's general perceptions of disadvantaged individuals, often impact the self-perception for those living in poverty. Further misunderstandings of poverty as a personal problem may occur as a result of the marginalized voice of the disadvantaged. Understanding economically disadvantaged individuals often occurs through the lens of mainstream society who may not have experience or exposure to alternate value systems or behavior patterns outside of their point of view (Pemberton et al., 2015). For participants involved in the poverty simulation, there was an opportunity to experience the social pressures faced by individuals in financial distress. The diverse family structures and economic levels built into the simulation allowed teachers to understand that poverty has many faces and the poor must be understood as individuals and not as a homogeneous group (Frank & Rice, 2017).

Disadvantaged families often have very different stories to tell regarding their pathway to poverty. Family breakdown, economic hardships, loss of work, lack of education, addiction, and debt may lead to a similar 'classification,' but often bare unique stories of hardship. These stories have a profound effect on children at the social, emotional, and academic levels. Some children, not able to fully understand the circumstances surrounding their poverty, may even blame themselves (Dean, 2003). Shifting perceptions through the experience of poverty simulations

have been successful in the development of empathy and understanding of poverty as a personal problem (Frank & Rice, 2017).

Poverty as an Economic Problem. From the poverty simulation pre- and post-survey there was a significant shift in teachers' perceptions regarding poverty as an economic problem. Research in psychology indicates that it is not necessarily bad decisions that lead some to poverty, but rather it is the cognitive toll of poverty that can lead to bad financial choices (Anandi, Mullainathan, Shafir, & Jiaying, 2012).

When faced with the many choices over which bills to pay with limited resources, researchers have found that working through difficult financial decisions can produce a cognitive strain equivalent to a 13-point deficit in IQ or a full night's sleep lost (Anandi et al., 2013). Not only does poverty produce a cognitive overload, economic distress has a negative effect on physical health (Yoshikawa et al., 2012), emotional health (Thompson & Dahling, 2019), and academic performance (Wilcox, 2014).

Poverty simulations offer educators a chance to "step into the shoes" of a family living in poverty to glimpse what it may be like to make difficult economic choices in order to keep their families safe and healthy. A life in poverty requires one to make different choices, often with consequences that the general population of educational professionals may not have in their experience. Simulations have the potential for developing empathy toward families of poverty, and understanding the difficult decisions faced on a daily basis. Poverty simulations, combined with training in effective classroom strategies, can be a tool for understanding the way students living in poverty are perceived and educated in today's classrooms.

Poverty as a Social Problem. The homogeneous population involved in this study posed a challenge to teachers to understand poverty as a rural, white problem. The majority of teachers in this study live a middle class lifestyle with a similar cultural lens and framework of understanding. From the needs assessments, participants believed that people from poverty receive adequate social services to maintain themselves, and that hard work can move families out of poverty. Adeola (2005) and Shaw and Shapiro (2002) have demonstrated that most Americans report the state of poverty as self-inflicted. Federal, state, and local programs that serve those in need are viewed as adequate, regardless of the mounting evidence that a life in poverty inflicts physiological and cognitive effects that may last years (Alloway et al., 2006; Carrion & Wond, 2012).

It is possible that poverty viewed as a social problem through the simulation experience did not produce a significant shift in teachers' perceptions because of stigmatized identities of the poor. Marginalized members of society are often viewed as distinct from mainstream society with different value systems and behaviors (Pemberton et al., 2015). Given that the poverty simulation participants represented middle-class America, the roles and choices presented in the simulation were not congruent with their personal experiences.

Helping teachers understand poverty as a social problem may help develop an understanding of the urgency to move disadvantaged students from a state of dependent learners to independent thinkers. This is an important step in moving students out of poverty, breaking the cycle of generational poverty, and helping students move toward challenging and productive cognitive struggle.

Poverty as an Educational Problem. No significant shift in teachers' perceptions on poverty as an educational problem occurred as a result of participating in a poverty simulation.

The question of why so many students from rural poverty are underachieving requires understanding poverty on several levels. The four domains of poverty examined in this research (poverty as a social, personal, economic, or educational problem) together contribute to the academic struggles students face in classrooms (Parrot & Budge, 2012). This presents a challenge to teachers who must strive to understand how the domains of poverty affect all aspects of teaching and learning that occurs in classes.

Given the lack of formal preparedness in teacher preparation programs, teachers are left to their own means in understanding how best to serve the needs of underprivileged students (Cho et al., 2015; Harding et al., 2005). The participants in this study represent teachers who are employed in rural public schools in upstate NY. Student and teacher populations are predominately white (>95%), and poverty rates have been present for some time, but increasing over the last decade (Appendix A). The combination of these factors has produced a preponderance of teachers that view poverty as part of the community structure and not necessarily as an irregularity that needs amending.

Schools across Upstate NY have attempted to close achievement gaps between economically disadvantaged students and their peers for many years. Some districts have focused on state assessments and gap analysis, while others have introduced school-wide programs aimed at building communities of learners. However, successfully teaching disadvantaged students requires teachers to develop a sociopolitical awareness that helps them understand the impact of their own cultural lens (Hammond, 2015). More relevant than attempting to diagnose academic deficiencies through state assessments is the practice of reflecting on one's own pedagogy. From the needs assessment, attitudinal beliefs indicated both teachers and administrators held beliefs that students from rural poverty were disconnected from the school environment, viewed

education in a negative light, and were more likely to have learning disabilities. An examination of individual sociopolitical views can help to deepen one's cultural lens and better manage social-emotional responses to economically disadvantaged students (Hammond, 2015). Cultural awareness builds sensitivity and understanding of the domains of poverty, allowing teachers to think about classroom reforms that might better support rural students living in poverty. Jacobson (2002) has proposed establishing teacher-student learning partnerships that create trust while maintaining high expectations for all students. Learning partnerships provide intellectual challenges for all students and have demonstrated a positive effect on student achievement (Jacobson, 2001).

Poverty simulation experiences may be useful in shifting teachers' perceptions around poverty and learning by deepening their understanding of the personal and economic toll that families from poverty must endure. Balancing everyday decisions with limited economic resources has repercussions on the quality of life for the disadvantaged. With a decreased quality of life comes other personal issues such as depression and lack of motivation (Day et al., 2011), difficulties in cognition needed to make advantageous decisions (Alloway et al., 2009), and health problems that affect physical and mental well-being (Evans, 2003).

Professional development that unfolds the relationship between cognitive development and learning in children is needed as part of pre-service teacher training (Cho et al., 2015). The absence of understanding poverty as an educational problem signals a lack of teachers' understanding of their ability to change the way students learn and process information. The condition of living under chronic stress can induce a state of cognitive overload that may be mistaken for apathy, non-motivation, and disinterest in education. Understanding how the brain learns is foundational to effective teaching. The issues surrounding poverty are complex and

require a deeper context than that provided simply by a poverty simulation. More research into the social and educational aspects of poverty on student achievement is needed in order to change negative social attitudes toward the poor (Frank & Rice, 2017). Long-term professional development embedded as part of pre-service teacher programs, as well as continued work-embedded professional development, can help broaden social empathy in order to reframe perceptions.

Research Question 2: To what extent does professional development focused on classroom strategies for rural students living in poverty affect teacher perception regarding poverty and learning?

Although many rural students living in poverty enter kindergarten with deficits in foundational knowledge and skills (Evans, 2002; Farah et al., 2006), the understanding of neuroplasticity reaffirms that proper instructional practices can, and do, reprogram the brain (Hammond, 2015).

From the needs assessment, an achievement gap between students living in poverty and their peers was identified. The awareness of a persistent achievement gap spanning more than a decade among students from rural poverty signals an imperative to shift teacher practices. Educators must recognize that they unconsciously contribute to maintaining the achievement gap when instruction focused on advanced cognitive skills is missing from the education of disadvantaged students. The learning gaps that young learners bring with them as they enter school continues to increase, leading to loss of motivation and engagement and, possibly, an early withdraw from school. It becomes crucial to help rural students living in poverty move from being a dependent learner to independence through a shift in mindset.

Of the six professional development sessions delivered to teachers following the poverty simulation experience, Session 3 (*Strategies for Big Picture Learning Design)* and Session 5 (*Strategies for Teaching for Extension and Application of Knowledge),* produced shifts in teachers' mindset regarding the introduced practices. Connecting ideas through big picture learning reinforces the application of knowledge. This may be a difficult task for students who have poor foundational knowledge, weak vocabulary, and little training in metacognitive skills. Effective implementation of big picture learning requires students to learn how to identify main concepts and organize thoughts in a cohesive manner. Constructing this schema requires students to build understanding and connections among elements, think abstractly, and understand relationships (Hardiman, 2012). Moving students into their zone of proximal development while in a state of relaxed alertness results in maximum learning, as teachers help students transform from dependent to independent learners (Hammond, 2015).

For the sessions targeting *Creating an Emotional Climate for Learning* (Session 1), *Creating the Physical Environment for Learning* (Session 2), *Teaching Mastery of Content, Skills, and Concepts* (Session 4), or *Evaluation and Assessment* (Session 6) there were no apparent changes in teachers' practices. It is possible that, because all teachers were elementary level (grades three, four and five), the strategies presented may have been perceived as similar to practices already in place, particularly for sessions 1 and 2. Both schools (treatment and control) have long had character building programs as part of their elementary education. It is possible that these programs were believed by teachers to establish an emotional climate that would serve all student learners. However, any activities meant to create a safe learning environment must first be built on a relationship of mutual trust and respect. Beginning with a meaningful relationship is the foundation of learning partnerships (Hammond, 2015). Environments that

attempt to culture an atmosphere of learning-ready students without first building trust between teachers and students may see little shift in student achievement.

Similarly, in *Creating the Physical Environment for Learning* (Session 2), all classrooms followed similar practices in providing reading spaces, art spaces, computer centers, and other areas of learning. Teachers may have assumed that providing appropriate and varied areas for learning activities was sufficient to accommodate all students (Day & Burns, 2011). However, because students living in poverty often lack academic preparation in both skill sets as well as foundational knowledge, it cannot be assumed that a well-organized classroom is sufficient to promote student motivation and self-directed inquiry in engaging with classroom resources. In addition, novelty is a necessary element in the classroom environment in order to trigger alertness and orientation to the task at hand (Hardiman, 2012). Teachers need to incorporate skill building and novelty into the use of classroom resources in order to support learning for rural students living in poverty.

In both Session 4 *(Teaching Mastery of Content, Skills, and Concepts)* and Session 6 *(Evaluation and Assessment)* there was little change in teachers' practices as reflected in the pre- and post-survey means. Teachers in the treatment school had been instructing students using NYS Education Department provided modules in ELA and math that aligned to the Common Core. The modules provided both instructional content as well as built-in formative and summative assessments aligned to the high stakes assessments in grades 3, 4 and 5. It is possible that teachers perceived these materials to be vetted and, therefore, reliable in terms of content mastery and evaluation for all students. The use of highly rigorous curriculum without filling in foundational knowledge gaps and scaffolding in support can cause some economically

disadvantages students to reinforce the belief that the skill gaps are further evidence of their own innate intellectual deficits (Hammond, 2015).

Teachers' practices regarding poverty and learning were not shifted as a result of professional development focused on strategies for *Creating an Emotional* (Session 1) or *Physical Environment* (Session 2) for learning. Since the participants in this study represented teachers in grades 3, 4, and 5, they believed themselves to be well-grounded in the needs of young children through their formal training and classroom experiences. This was reflected in conversation, as well as the language used when discussing classroom practices. Similarly, the participants were using state-developed curriculum to guide instruction in ELA and math, complete with pre-determined assessments. This may have contributed to their confidence in teaching mastery of content (Session 4) and assessment (Session 6).

The shift in teachers' classroom activities relating to *Big Picture Learning Design* (Session 3) and *Teaching for Extension* (Session 5) may have resulted from a better understanding of the constraints to learning faced by rural students living in poverty. The professional development sessions, together with the poverty simulation experience, may have provided teachers a broader understanding of the need to build schema and connections within content, particularly for students with learning gaps.

Research Question 3: How are teachers' attitudes towards learning and poverty changed as a result of receiving both poverty simulation training and professional development on classroom strategies for teaching rural students living in poverty?

Three quarters of the volunteer focus group teachers who participated in both the poverty simulation and professional development training agreed that their understanding of how poverty affects learning had changed. Some indicated that the training had served as a reminder of

effective practices (72%), while others cited specific strategies that changed their understanding such as creating a comfortable learning environment (66%), spiraling student learning (31%), and diversifying teaching strategies (57%). Over 73% felt they had a better understanding of how stress and the production of cortisol affects brain activity. Understanding how one's teaching practices can be modified to increase student learning is a first move toward greater awareness of constraints to learning faced by economically disadvantaged students.

Eighty percent (80%) of teachers who participated in the focus group believed that the training affected their classroom practices. Some (36%) indicated that it served as a time to reflect and re-evaluate current practices, while others (85%) held to the notion that the training reinforced best practices in their classroom. Professional development that provides teachers with actionable strategies to change classroom practices has been an effective tool in developing teacher leaders (Taylor et al., 2019).

When focusing on rural students living in poverty, 47% of respondents agreed that "The training helped me focus on desired outcomes for student of poverty", and 49% agreed that the training "Helped me improve my relationships with students living in poverty." Empowering teachers with awareness training and classroom practices has the potential to help teachers reevaluate their beliefs in widespread social norms that contribute to, and perpetuate, many ideas surrounding poverty (Einhellig et al., 2014)

When asked about the usefulness of the professional development training, 93% of volunteer focus group respondents agreed the training provided useful information. The reasons teachers cited the strategies as useful included: reinforcement of good teaching (67%), ease of implementation (78%), useful for solving short-term problems (62%), useful for long-term solutions (62%), and built in time to practice the strategies (33%).

Participants believed the professional development sessions affected their students in several ways. Some noted an improved relationship with their students (73%), some indicated that students took notice of the change in practice (67%), some noted that students benefitted academically from the embedded strategies (68%), while others indicated that students benefitted emotionally (83%).

Overall teachers indicated that the professional development focused on best practices for students living in poverty served as a beneficial reminder of good classroom teaching. Those indicating that the strategies presented helped change their perceptions believed that the time to implement, observe, and reflect on the outcomes was important. The change needed to shift perceptions requires proof and validation. The pacing of professional development session with time built-in for practice was important in supporting change.

Summary

The needs assessment preceding the two-part intervention strategy revealed underlying misconceptions relating to rural poverty and student achievement among teachers. Using this baseline of perception, the dual interventions were designed to provide a simulated experience of living under the stressors of poverty, in addition to supporting learning for disadvantaged students through best practices. The goal of the research was to change teachers' perceptions of poverty and to promote effective classroom practices that support economically disadvantaged learners.

Teachers' perceptual baseline related to the educational and social implications of poverty on learning were not affected by the interventions. However, teachers were able to shift perceptions of poverty along the lines of personal and economic problems to some degree. Additionally, poverty simulations followed by professional development did provide some

changes in teacher practices related to Big Picture Learning Design and Strategies for Teaching for Extension and Application of Knowledge. Because the professional development presented a diverse set of strategies that were easy to implement, this may have served as a reminder for teachers of best practices supporting learning for rural students living in poverty.

Even so, it is not clear whether the presence or absence of a noted shift in teachers' perceptions could be attributed exclusively to the professional development received, or simply that some parts of the training more closely aligned to and reinforced current beliefs. In order to ascertain the effects of the professional development, more research will need to be conducted on teachers' understanding of poverty as a social and educational problem. Teachers reported that they were more reflective about their relationships with students after the training, and even noted some improvements in those relationships. Consequently, some teachers indicated that students responded to those changes, and may have benefited emotionally.

Implications for Research and Practice

More research about the effects of poverty on student academic achievement can benefit teachers in implementing classroom practices that support economically disadvantaged students. Educational professionals need to become more aware of the constraints to learning faced by students living in poverty in order to respond with early interventions. Research targeting the use of poverty simulations in K-12 educational settings is needed, along with sustained professional development that gives teachers research-based tools when working with rural students living in poverty.

Understanding and supporting the use of classroom strategies for economically disadvantaged students needs to be a district-wide initiative. Teachers of elementary students who incorporate all-inclusive classroom strategies can help to shape independent learners,

despite economic setbacks that may be reflected in a child's home life. Professional development focused on current research in neuroeducation may be beneficial as an on-going program for K-12 teachers. Knowing how the brain develops and how students respond to information is foundational knowledge that would benefit all teachers.

Further understanding of how poverty and trauma affect learning is also needed. Rural students living in poverty often enter school with weak foundational knowledge, vocabulary, and skills needed for academic success (Hammond, 2015). Research in cognitive and educational psychology has long demonstrated that filling learning gaps and building a strong educational foundation requires both spacing out and repeating material over time (Kang, 2016). These are important classroom practices needed for building the extension and application of knowledge for students living in poverty. However, only 31% of teachers reported this practice to be beneficial. Understanding how the brain learns is critical to effective teaching.

Administrators can support teachers in developing awareness to learning constraints when working with students living in poverty. Encouraging teachers to adopt and refine strategies known to support disadvantaged students can be part of a professional coaching program. Monitoring progress through data collection can help inform teachers as to which practices are most effective for their students. As students' progress through the K-12 grades, supportive classroom practices will likely also change. This collective data can be used to monitor best-practices in instruction when working with rural students living in poverty within schools and districts.

Results of this research suggest that poverty simulations may be an effective first step in raising awareness of the many ways that poverty can disrupt learning. The experiential nature of a poverty simulation allows participants to understand the many stressors that affect students

living in poverty. However, poverty simulations alone are insufficient to make permanent changes in the classroom. Teachers also need strategies for working with rural students living in poverty. Because poverty has both physiological and cognitive impacts, strategies addressing a child's emotional, physical, and intellectual well-being must be considered (Reeves, 2012; Hardiman, 2012). When trained in a series of strategies, teachers can choose to adopt or adapt classroom practices that best support the needs of the students in their classrooms. To date, the combination of a poverty simulation and professional development as an integrated package for shifting awareness of teachers for rural students living in poverty has not been documented. This research was intended to investigate that possibility. Further research focused on both younger and older learners is needed, as is research on incorporating other classroom practices.

The current state of social inequalities prevalent in education merit a closer look at the systems and institutions that are in place. An examination of pre-service teacher training is needed, particularly in view of preparation in the areas of social justice, culturally responsive teaching, and neuro-education. Grounded in a firm knowledge of how students learn, teachers will be better equipped to teach to the diversity in today's classroom. Through the lens of equity, teachers will be better able to empathize with students' needs. Using culturally responsive teaching strategies teacher efficacy will be strengthened in reaching all students in the classroom. Education is currently evolving through some very difficult and uncertain times, and yet these challenges offer an opportunity to become reflective practitioners. Navigating through the additional obstacles in education brought on by the current worldwide pandemic, it becomes even more urgent to incorporate specific, measurable strategies that will support students from trauma, particularly our rural students living in poverty. Schools are faced with both opportunities and challenges to think and plan strategically and emerge from the current turmoil

toward an educational system that is both culturally responsive and socially just. Students from rural poverty cannot afford the loss of further learning opportunities. It is time to build learning partnerships that last.

Limitations

The results of this study are limited by its small sample size and restriction to grades 3, 4 and 5 teachers, teachers' aides and special education teachers. A sample of the 52 educators involved in this study is limited and does not represent teachers across New York, nor the US. Future sample populations would need to include a larger sample size, as well as educators of other grade levels.

Further external threats to validity may be attributed to selection-treatment interactions. Given that participants were volunteers in this study, it is possible that teachers who were already aware of, and empathetic to, the difficulties faced by rural students living in poverty would have agreed to participate.

Rural, white poverty is a growing concern across many areas of Upstate New York where this research took place. As such, results may not be applicable to other high poverty populations such as inner cities or urban areas. Additionally, the professional development was designed for teachers who largely represented white, middle class professionals, further limiting results for teachers from a more economically or racially diverse population.

Conclusions

This research project examined the perceptions of teachers, teachers' aides and special education teacher in relation to the effects of rural poverty on learning through the introduction of a poverty simulation and professional development. The research also

intended to prove that a knowledge gap exists among educators regarding the constraints to learning faced by students living in poverty.

The evolving field of neuroeducation now provides a wealth of research indicating that poverty can have lasting effects on the physical and cognitive well-being of individuals. The disadvantages faced by rural students living in poverty create obstacles to their academic success. Teachers, school staff, and administrators need to be aware of the effects of poverty on student learning and behaviors in order to offer appropriate support.

Awareness training through poverty simulation can open a window to dialogue in order to set in motion a school or district-wide plan to address issues related to poverty and learning. Professional development focused on effective, research-based strategies for addressing the effects of poverty on students' needs to be a school or district-wide initiative in order to create an equitable learning environment for all children.

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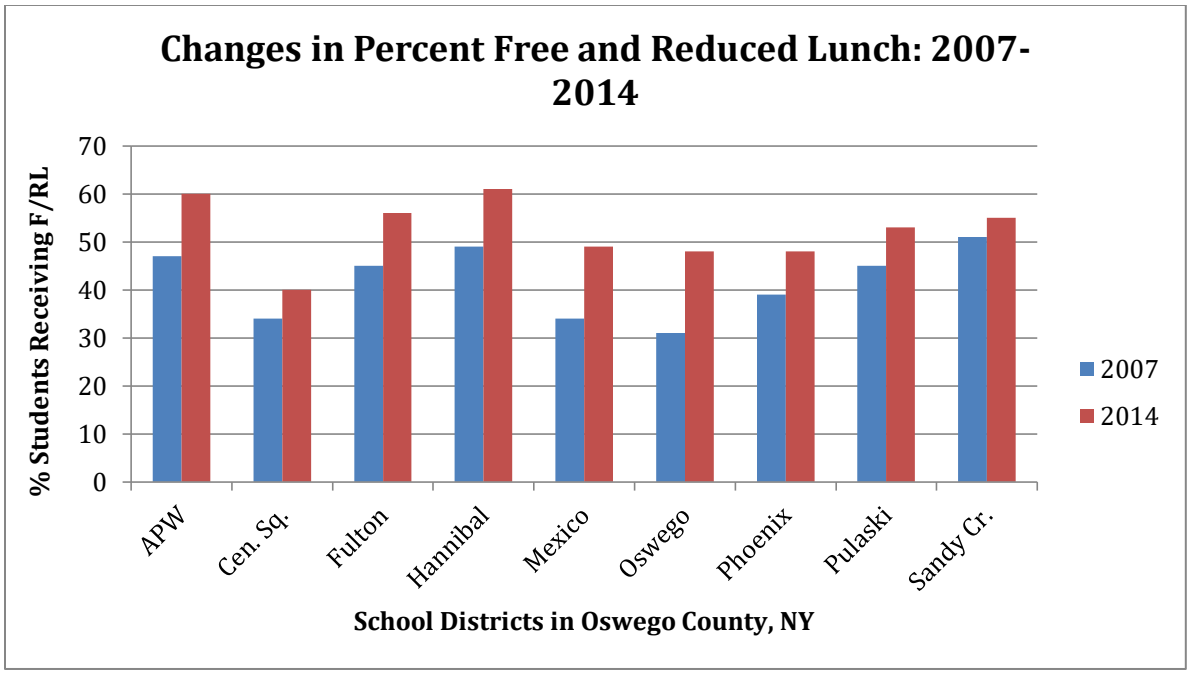
Appendix A

Historic Changes in Poverty Levels in Oswego County, NY



Appendix B

Needs Assessment and Perception Pre- and Post-Survey Instrument

Survey Participants,

Thank you for taking the time to contribute your opinion to our survey. Poverty has been on the rise across Oswego County for several years. It is important to identify the impact that poverty has on teaching and learning. The goal of this survey is to more fully understand perceptions surrounding students living in poverty and academic achievement. Your participation is voluntary. Results of this survey will be used to build professional development that will focus on strategies for working with students living in poverty. Thank you for participating in this survey.

Which of the following grade levels do you teach?
You may choose more than one, if applicable.

- ☐ 3rd
- ☐ 4th
- ☐ 5th
- ☐ Other: _____

How long have you been working in the field of education?

- ○ 1-5 years
- ○ 6-10 years
- ○ 11-20 years
- ○ 21 or more years

How big a problem is poverty in our county today?

	1	2	3	4	5	
big problem	○	○	○	○	○	small problem

In your opinion, which is the bigger cause of poverty in Oswego County today?

- ○ People are not doing enough to help themselves out of poverty.
- ○ Circumstances beyond their control cause people to be poor.
- ○ Other: _____

How well do you understand the differences in the types of poverty listed below:

	Uncertain	Some understanding	Understand
Situational Poverty	○	○	○
Generational Poverty	○	○	○
Absolute Poverty	○	○	○
Relative Poverty	○	○	○

For each of the following, please indicate the impact on poverty.

	Major Cause	Minor Cause	No Effect
Too many jobs being part time or low wage	○	○	○
Shortage of jobs	○	○	○
The welfare system	○	○	○
Drug or alcohol abuse	○	○	○
People lack motivation	○	○	○
Too many single-parent families	○	○	○
Medical bills	○	○	○
Lacking in education sufficient for employment	○	○	○

Compared to 10 years ago, do you think it is easier today or harder today for a person to start out poor, work hard, and to get out of poverty?

- ○ Easier
- ○ Harder
- ○ Same
- ○ Don't know

Please read each statement below carefully and respond based on your personal understanding.

	Strongly agree	Somewhat agree	Don't know	Somewhat disagree	Disagree
The community provides effective and efficient services to help	○	○	○	○	○

	Strongly agree	Somewhat agree	Don't know	Somewhat disagree	Disagree
families with low incomes.					
People with low incomes do not have to work as hard because of all of the services available to them.					
People with low income get a lot of breaks with respect to things like rent, utilities, and other expenses that others must pay for.					
People get enough money to survive from welfare, food stamps and other social programs.					
People with low income could improve their situation if they could just apply themselves differently.					
There are additional emotional costs associated with being poor in America.					
The financial pressures faced by people with low income are no different than those faced by other Americans.					

Students living in poverty have a more limited vocabulary.

- True
- False
- Unsure

Students living in poverty have difficulties connecting school success with success in life.

- True
- False
- Unsure

Families living in poverty have a negative view of education.

- True
- False
- Unsure

Students living in poverty are more likely to have learning disabilities than non-poverty students.

- True
- False
- Unsure

Appendix C

Intervention Timeline: Strategies for Supporting Economically Disadvantaged Students in the Classroom

PD Session	Session Objective	Professional Development Training Strategies	Data collection tool
1	Strategies for Creating an Emotional Climate for Learning	□ Build foundational relationships of mutual respect and trust with all students in your class. □ Give behavior-specific praise for effort. □ Greet all students by name as they enter the class. □ Use classroom routines that are understood by all. □ Incorporate rituals that motivate and engage. □ Acknowledge special accomplishments. □ Each student can identify a caring adult in the school. □ Acknowledge diversity through content materials. □ Insure activities foster personal connections to the content. □ Give students voice and choice. □ Use humor.	Pre-survey for Session 1 (Appendix D)
2	Strategies for Creating the Physical Environment for Learning	□ Display student work that relates to current unit of study. □ Create a sense of novelty by changing displays often. □ Use color and design to create a relaxing space for students to learn. □ Make sure lighting is optimized in the classroom. □ Use music, when appropriate, to create a relaxing classroom environment. □ Provide an orderly, clean environment, free of clutter that creates an environment of belonging for students. □ Use flexible seating arrangements depending on the activity. □ Provide time for quiet reflection on content material using the 10:2 rule. □ Establish a mindset for yourself and your students that everyone can improve and succeed. □ Set attainable goals for yourself and your students and celebrate when these are met. □ Incorporate movement in each class period.	Post-survey for Session 1 Pre-survey for Session 2 (Appendix E)
3	Strategies for Big Picture Learning Design	□ Focus on the New York State Common Core State Standards as a foundation for instruction	Post-survey for Session 2

		☐ Insure that the key learning goals and objectives are understood by students and teacher ☐ Assess students for prior knowledge before beginning lesson or unit. ☐ Set the stage for learning by creating an emotional connection to content for student. ☐ Use concept maps to reinforce big picture learning ☐ Use graphic organizers to help students connect prior knowledge and content concepts. ☐ Use mnemonics to help students develop memory skills. ☐ Have students set personal learning goals for the lesson or unit. ☐ Insure that students use a variety of activities to both gain knowledge, and demonstrate knowledge gained. ☐ Integrate technology in order to support learning and choice for students. ☐ Insure that activities align with learning objectives and summative assessments.	Pre-survey for Session 3 (Appendix F)
4	Strategies for Teaching Mastery of Content, Skills, and Concepts	☐ After 10-15 minutes of instructional time, allow for peer-to-peer time for processing information. ☐ Incorporate writing, drawing, or project creation as forms of demonstration of student learning. ☐ Refer back to the big picture concept map so students retain a point of reference during learning. ☐ Repeat exposure to new concept, skills and content in a variety of ways and spaced throughout the unit of lesson. ☐ Incorporate both “chunking” and “spacing” to reinforce long-term memory of content. . ☐ Use pictures, graphs, charts, videos and images to introduce content before instruction begins, allowing students time to construct meaning. ☐ Incorporate direct vocabulary instruction of both Tier 2 & Tier 3 words in order to support comprehension of content. ☐ Provide students with a variety of content-related reading material at various levels of difficulty. ☐ Pause, paraphrase and summarize periodically to check for understanding.	Post-survey for Session 3 Pre-survey for Session 4 (Appendix G)
5	Strategies for Teaching for Extension and Application of Knowledge	☐ Use compare and contrast strategies to promote divergent thinking through classroom discussions, activities and projects. ☐ Teach analysis skills so students are equipped to deconstruct information in support of critical thinking and problem solving.	Post-survey for Session 4 Pre-survey for Session 5 (Appendix H)

		☐ Teach synthesis skills so students are equipped to construct information in support of critical thinking and problem solving. ☐ Provide models to deepen student understanding. ☐ Incorporate time for students to apply content knowledge to real-world problems. ☐ Teach cause and effect so students understand connections between actions and outcomes. ☐ Incorporate investigations and experiments as part of lessons and unit studies in order to support students in discovery of knowledge. ☐ Use classification of information to support student convergent and divergent thinking. ☐ Make visible the connections to learning through the lens of students' personal experience.	
6	Strategies for Evaluation and Assessment	☐ Provide immediate, frequent and timely feedback to students. ☐ Check frequently during class for understanding through questioning that requires active retrieval of stored knowledge. ☐ Space information retrieval through repetitions over time to strengthen memory and learning. ☐ Use multiple types of assessments to allow for demonstration of learning. ☐ Use rubrics that are clear and explicit regarding expectations of student performance. Share all rubrics with students. ☐ Allow time for self-reflection by students in order to provide for deeper understanding of content, corrective thinking, and the opportunity to extend thinking. ☐ Provide opportunities for students to revise work	Post-survey for Session 5 Pre-survey for Session 6 (Appendix I)
7	Post Survey		Post-survey for Session 6 (Appendix I)

Appendix D

Session 1: Professional Development Pre- and Post-Survey

Survey Participants,

Thank you for taking the time to contribute your opinion to our survey. Poverty has been on the rise across Oswego County for several years. It is important to identify the impact that poverty has on teaching and learning. The goal of this survey is to more fully understand perceptions surrounding students living in poverty and academic achievement. Your participation is voluntary. Results of this survey will be used to build professional development that will focus on strategies for working with students living in poverty. Thank you for participating in this survey.

Which of the following grade levels do you teach?
You may choose more than one, if applicable.

- ☐ 3
- ☐ 4
- ☐ 5
- ☐ Other

Please indicate your level of agreement or disagreement with the following statement from your classroom perspective.

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Strongly disagree (5)
The conversations between adults and students demonstrates mutual respect.	○	○	○	○	○
I give daily behavior-specific praise for effort to students.	○	○	○	○	○
I greet students by name as they enter the classroom.	○	○	○	○	○
Classroom routines and rules are posted and understood by all students.	○	○	○	○	○
I use quick and enjoyable rituals to motivate and engage my students.	○	○	○	○	○
I make it a point to acknowledge special accomplishments by my students in class.	○	○	○	○	○
Every student is able to identify a caring adult in our school.	○	○	○	○	○
I acknowledge student diversity through the materials I choose for teaching.	○	○	○	○	○

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Strongly disagree (5)
Every learning unit includes activities that foster personal connection to the content.					
Students are given choices in learning and evaluation activities.					
I often use humor to create an emotionally safe learning environment.					

Appendix E

Session 2: Professional Development Pre- and Post-Survey

Survey Participants,

Thank you for taking the time to contribute your opinion to our survey. Poverty has been on the rise across Oswego County for several years. It is important to identify the impact that poverty has on teaching and learning. The goal of this survey is to more fully understand perceptions surrounding students living in poverty and academic achievement. Your participation is voluntary. Results of this survey will be used to build professional development that will focus on strategies for working with students living in poverty. Thank you for participating in this survey.

Which of the following grade levels do you teach?
You may choose more than one, if applicable.

- ☐ 3
- ☐ 4
- ☐ 5
- ☐ Other

Please indicate your level of agreement or disagreement based on your current level of practice.

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Strongly disagree (5)
I display student work that relates to current units of study.					
I create a sense of novelty by changing displays often.					
I use color and design to create a relaxing space for students to learn.					
I make sure lighting is optimized in the classroom.					
I often use calming background music to create an environment for learning.					
Our classroom is orderly, clean and free of clutter creating an environment of belonging for students.					
I use flexible seating arrangements					

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Strongly disagree (5)
depending on the activity.					
I provide time for quiet reflection using the 10:2 rule.					
All students in my class believe they can improve and succeed.					
I set attainable personal goals for myself and my students, celebrating when these goals are met.					
I incorporate movement in each class period.					

Appendix F

Session 3: Professional Development Pre- and Post-Survey

Survey Participants,

Thank you for taking the time to contribute your opinion to our survey. Poverty has been on the rise across Oswego County for several years. It is important to identify the impact that poverty has on teaching and learning. The goal of this survey is to more fully understand perceptions surrounding students living in poverty and academic achievement. Your participation is voluntary. Results of this survey will be used to build professional development that will focus on strategies for working with students living in poverty. Thank you for participating in this survey.

Which of the following grade levels do you teach?
You may choose more than one, if applicable.

- ☐ 3
- ☐ 4
- ☐ 5
- ☐ Other: _____

Please indicate your level of agreement or disagreement based on your current level of practice.

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Strongly disagree (5)
My lessons and unit plans are NYS CC aligned	○	○	○	○	○
I insure that the key learning goals and objectives are understood by all	○	○	○	○	○
I assess students for prior knowledge before beginning a lesson or unit	○	○	○	○	○
I make sure I set the stage for learning by creating an emotional connection to content	○	○	○	○	○
I use concepts maps to reinforce big picture learning	○	○	○	○	○
Graphic organizers are often used to help students connect prior knowledge and content concepts	○	○	○	○	○

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Strongly disagree (5)
I teach my students to use mnemonics to help develop memory skills					
Students set personal learning goals for lessons and units					
I provide a variety of activities for students to gain knowledge and demonstrate knowledge gained					
I integrate technology in order to support learning and choice for students					
I insure learning activities align with learning objectives and summative assessments					

Appendix G

Session 4: Professional Development Pre- and Post-Survey

Survey Participants,

Thank you for taking the time to contribute your opinion to our survey. Poverty has been on the rise across Oswego County for several years. It is important to identify the impact that poverty has on teaching and learning. The goal of this survey is to more fully understand perceptions surrounding students living in poverty and academic achievement. Your participation is voluntary. Results of this survey will be used to build professional development that will focus on strategies for working with students living in poverty. Thank you for participating in this survey.

Which of the following grade levels do you teach?
You may choose more than one, if applicable.

- ☐ 3
- ☐ 4
- ☐ 5
- ☐ Other: _____

I use these classroom practices on a regular (at least weekly) basis with my students:

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Strongly disagree (5)
After instructing for 10-15 minutes, students are given time to discuss content with their peers (turn-and-talk time).	○	○	○	○	○
Students often elaborate on their learning through writing, drawing, or project creation.	○	○	○	○	○
During instruction, references to the "big picture" concept map are made so students retain a point of reference while learning new material	○	○	○	○	○
Exposure to new concepts, skills and content is repeated in a variety of ways ans spaced throughout instruction	○	○	○	○	○
I incorporate both "chunking" and "spacing" of knowledge	○	○	○	○	○

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Strongly disagree (5)
in order to reinforce long-term memory					
Pictures, graphs, charts, videos, images are used to introduce a topic before instruction begins, allowing time for students to construct meaning.					
I incorporate direct vocabulary instruction of both Tier 2 & Tier 3 vocabulary to improve student comprehension					
Students are given a variety of content-related reading material at various levels of difficulty.					
I pause, paraphrase and summarize periodically to check for understanding					

Appendix H

Session 5: Professional Development Pre- and Post-Survey

Survey Participants,

Thank you for taking the time to contribute your opinion to our survey. Poverty has been on the rise across Oswego County for several years. It is important to identify the impact that poverty has on teaching and learning. The goal of this survey is to more fully understand perceptions surrounding students living in poverty and academic achievement. Your participation is voluntary. Results of this survey will be used to build professional development that will focus on strategies for working with students living in poverty. Thank you for participating in this survey.

Which of the following grade levels do you teach?
You may choose more than one, if applicable.

- ☐ 3
- ☐ 4
- ☐ 5
- ☐ Other: _____

I use these classroom practices on a regular (at least weekly) basis with my students:

	Strongly agree	Somewhat agree	Don't know	Somewhat disagree	Strongly disagree
Students use compare and contrast strategies to promote divergent thinking through classroom discussions, activities and projects	○	○	○	○	○
I teach analysis skills so students are equipped to deconstruct information in support of critical thinking and problem solving	○	○	○	○	○
I teach synthesis skills so students are equipped to construct information in support of critical thinking and problem solving	○	○	○	○	○
I provide models to deepen student understanding	○	○	○	○	○
I incorporate time for students to apply content knowledge to real-world problems	○	○	○	○	○

	Strongly agree	Somewhat agree	Don't know	Somewhat disagree	Strongly disagree
I teach cause and effect so students understand connections between actions and outcomes					
I incorporate investigations and experiments as part of lessons and unit studies in order to support students in discovery of knowledge					
I use classification of information to support students convergent and divergent thinking					
I make visible connections to learning through the lens of students' personal experiences					

Appendix I

Session 6: Professional Development Pre- and Post-Survey

Survey Participants,

Thank you for taking the time to contribute your opinion to our survey. Poverty has been on the rise across Oswego County for several years. It is important to identify the impact that poverty has on teaching and learning. The goal of this survey is to more fully understand perceptions surrounding students living in poverty and academic achievement. Your participation is voluntary. Results of this survey will be used to build professional development that will focus on strategies for working with students living in poverty. Thank you for participating in this survey.

Which of the following grade levels do you teach?
You may choose more than one, if applicable.

- ☐ 3
- ☐ 4
- ☐ 5
- ☐ Other: _____

I use these classroom practices on a regular (at least weekly) basis with my students:

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Strongly agree (5)
I provide immediate, frequent and timely feedback to students	○	○	○	○	○
I check frequently during class for understanding through questioning that requires active retrieval of stored knowledge	○	○	○	○	○
I space information retrieval through repetitions over time to strengthen memory and learning	○	○	○	○	○
I use multiple types of assessments to allow for demonstration of learning	○	○	○	○	○
I use rubrics that are clear and explicit regarding expectations of student performance. I share all rubrics with students	○	○	○	○	○

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Strongly agree (5)
I allow time for self – reflection by students in order to provide for deeper understanding of content, corrective thinking and the opportunity to extend thinking					
I provide opportunities for students to revise work					

Appendix J

Pre and Post-Survey (Treatment and Control Groups)

Survey Participants,

Thank you for taking the time to contribute your opinion to our survey. Poverty has been on the rise across Oswego County for several years. It is important to identify the impact that poverty has on teaching and learning. The goal of this survey is to more fully understand perceptions surrounding students living in poverty and academic achievement. Your participation is voluntary. Results of this survey will be used to build professional development that will focus on strategies for working with students living in poverty. Thank you for participating in this survey.

Which of the following grade levels do you teach?
You may choose more than one, if applicable.

- ☐ 3rd
- ☐ 4th
- ☐ 5th
- ☐ Other: _____

How long have you been working in the field of education?

- ○ 1-5 years
- ○ 6-10 years
- ○ 11-20 years
- ○ 21 or more years

How big a problem is poverty in our county today?

	1	2	3	4	5	
big problem	○	○	○	○	○	small problem

In your opinion, which is the bigger cause of poverty in Oswego County today?

- ○ People are not doing enough to help themselves out of poverty.
- ○ Circumstances beyond their control cause people to be poor.
- ○ Other: _____

How well do you understand the differences in the types of poverty listed below:

	Uncertain	Some understanding	Understand
Situational Poverty			
Generational Poverty			
Absolute Poverty			
Relative Poverty			

For each of the following, please indicate the impact on poverty.

	Major Cause	Minor Cause	No Effect
Too many jobs being part time or low wage			
Shortage of jobs			
The welfare system			
Drug or alcohol abuse			
People lack motivation			
Too many single-parent families			
Medical bills			
Lacking in education sufficient for employment			

Compared to 10 years ago, do you think it is easier today or harder today for a person to start out poor, work hard, and to get our of poverty?

- Easier
- Harder
- Same
- Don't know

Please read each statement below carefully and respond based on your personal understanding.

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Disagree (5)
The community provides effective and efficient services to help families with low incomes.					
People with low incomes do not have to work as hard because of all of the					

	Strongly agree (1)	Somewhat agree (2)	Don't know (3)	Somewhat disagree (4)	Disagree (5)
services available to them.					
People with low income get a lot of breaks with respect to things like rent, utilities, and other expenses that others must pay for.					
People get enough money to survive from welfare, food stamps and other social programs.					
People with low income could improve their situation if they could just apply themselves differently.					
There are additional emotional costs associated with being poor in America.					
The financial pressures faced by people with low income are no different than those faced by other Americans.					

Students living in poverty have a more limited vocabulary.

- True
- False
- Unsure

Students living in poverty have difficulties connecting school success with success in life.

- True
- False
- Unsure

Families living in poverty have a negative view of education.

- True
- False

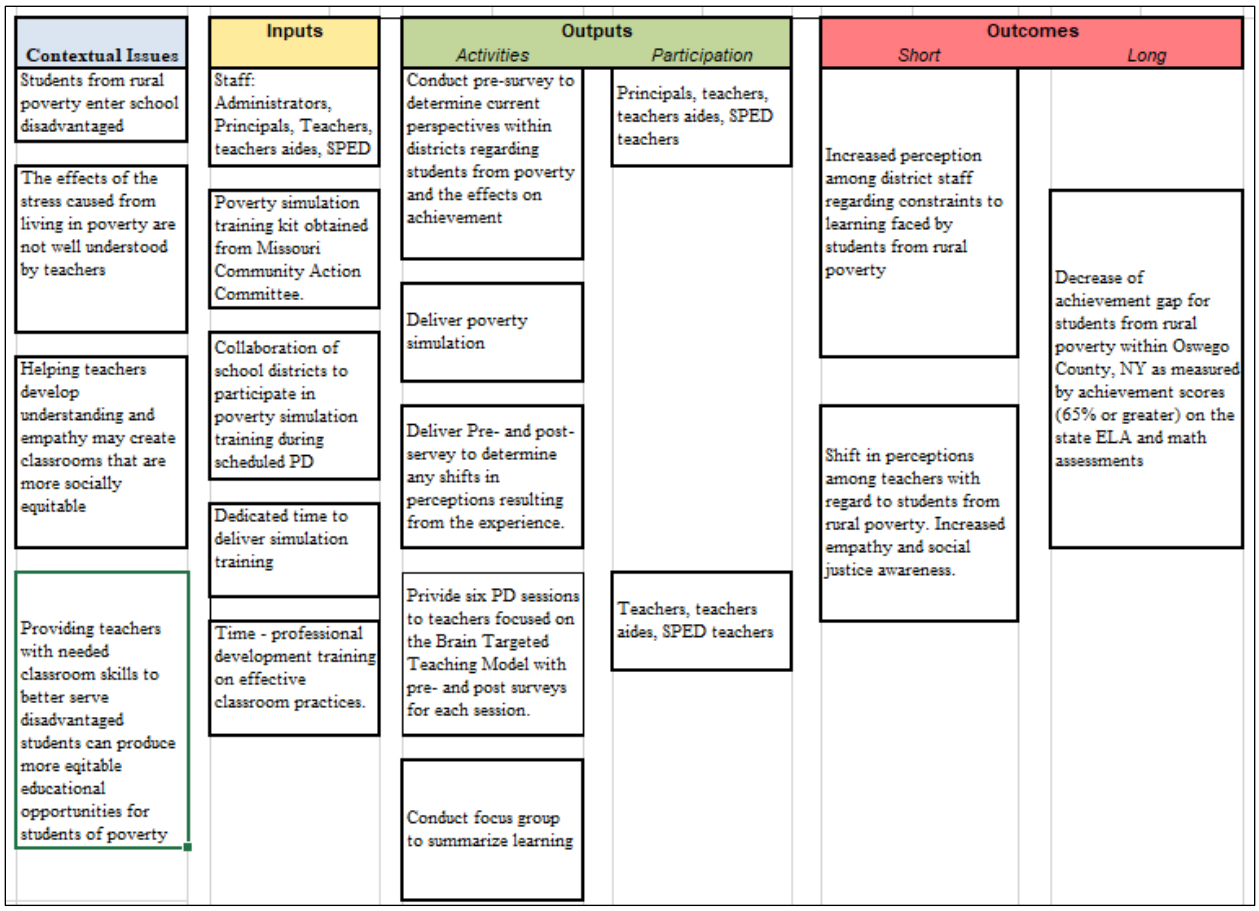
- Unsure

Students living in poverty are more likely to have learning disabilities than non-poverty students.

- True
- False
- Unsure

Appendix K

Logic Model



BIOGRAPHICAL SKETCH

Barbara Recchio was born in Vineland, New Jersey. After completing her school work at Delsea Regional High School in Franklinville, New Jersey, Barbara entered Colorado State University in Fort Collins, Colorado where she received a Bachelor of Science degree in agronomy. She spent two years as a Peace Corp Volunteer in Colombia working with women farmers in the area of agricultural sustainability. She went on to receive a Master of Science degree from Michigan State University in genetics and statistics. During the next three years, Barbara worked as a research associate in Botswana investigating the genetic diversity of local agricultural crops. She was awarded a USDA Fellowship in Biotechnology at the University of California, Riverside, where she pursued further graduate work. A move to New York brought on an opportunity to teach undergraduate courses at Keuka College, Keuka Park, NY. This sparked a love for teaching and working with students. Barbara went on to pursue a second Master of Science degree in Curriculum Design and Instructional Technology at the University at Albany, Albany, NY. She taught at the middle and high school level for seven years before completing a graduate certificate program at Johns Hopkins University. Currently she is the Director of ELS, Science, and World Languages at Monticello CSD, Monticello, NY.